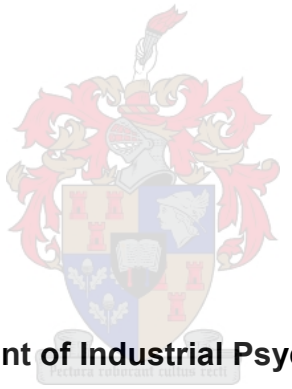
PSYCHOLOGICAL CONTRACT BREACH AND THE ROUTES TO COUNTER-PRODUCTIVE WORK BEHAVIOUR AMONGST ACADEMICS

by

Crispen Chipunza

Thesis presented in partial fulfilment of the requirements for the degree of Master of Commerce (Industrial Psychology) in the Faculty of Economic and Management Sciences at Stellenbosch University



Department of Industrial Psychology

Supervisor: Mr. F. van der Bank

March 2020

PLAGIARISM DECLARATION

By submitting this research report electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save for the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Signed: C Chipunza Date: March 2020

ABSTRACT

The high prevalence of counter-productive work behaviour among academics in institutions of higher learning in South Africa is widely reported. As such, studying its antecedents is critical. Knowledge of the antecedents of counter-productive work behaviour among academics can empower human resource managers to address it more effectively. The problem, however, is that there is relatively little research into the circumstances that lead to counterproductive work behaviours among academics. Furthermore, previous research does not seem to have adequately addressed one of the most important underlying sources of counterproductive work behaviour, namely psychological contract breach.

Using psychological contract breach as a focal point, the objective of the current study was, therefore, to examine the sources and psychological mechanism that could explain why academics engage in counter-productive work behaviour. Specifically, the study examined the influence of academics' perceptions of psychological contract breach on counter-productive work behaviour; through three routes, namely, the *stress reaction route* - with variables such as occupational stress and negative emotions; the *injustice route* - with variables such as justice perceptions and affective commitment and, the *retaliation or revenge route* – with the variable of feelings of retaliation. Conscientiousness was included as the only personality variable.

The study used a non-probability sample of n=188 full-time academic staff members from three selected pubic higher education institutions in the country. An *ex post facto* design was chosen to test the hypothesised relationships, and data was collected using a questionnaire. Counter-productive work behaviour was measured with the self-report deviance scale (Robinson & Bennet, 1995). Negative affect was assessed by the Emmons Mood indicator (Dinner & Dimmons, 1984), while occupational stress was measured using the Job Stress Measure (Sakketou et al., 2014). Organisational justice subscales of procedural and distributive justice (Le Roy et al., 2015) were used to measure justice perceptions. Affective commitment used the Allen and Meyer's (1996) affective commitment scale, while the psychological contract breach used five items developed by Robinson and Morrison (2000). Revenge scale (Wade, 1989) was used to measure feelings of revenge and, lastly, Conscientiousness items were taken from the Big Five Inventory (John et al., 2008).

Items, as well as exploratory and confirmatory factor analyses were used to examine the psychometric properties of the instruments. Structural Equation modelling (SEM) was used to test the structural model fit, with good model fit obtained after the model was modified to include three additional pathways. The results indicated that negative affect and feelings of retaliation have a statistically positive effect on counter-productive work behaviour, whereas conscientiousness was negatively related to counter-productive work behaviour. Occupational stress and organisational justice positively showed a positive and negative relationship with negative affect, respectively. The results also show that negative affect and affective commitment have a positive and negative effect on feelings of retribution, respectively. Psychological contract breach emerged as a predictor with a statistically negative relationship with perceived organisational justice, while organisational justice perceptions showed a statistically positive relationship with affective commitment. Support was also found for the influence of negative affect on psychological contract breach. No support was, however, found for the following hypotheses: The statistically negative influence of affective commitment on counter-productive work behaviour, the statistically positive effect of psychological contract breach on occupational stress and, lastly, the statistically positive relationship between psychological contract breach and feelings of retaliation.

With the focus on psychological contract breach as an underlying source of various psychological reactions, this study contributes to the literature on the reasons for counter-productive work behaviour among academics in South Africa.

OPSOMMING

Daar word wyd berig oor die hoë voorkoms van teenproduktiewe werksgedrag onder akademici in hoëronderwysinstellings in Suid-Afrika. As sodanig is die bestudering van toonaangewende studies oor die onderwerp van kritieke belang. Kennis oor die determinante van teenproduktiewe werksgedrag onder akademici kan menslike hulpbronbestuurders bemagtig om dit meer effektief aan te spreek. Die probleem egter is dat daar relatief min navorsing bestaan oor die omstandighede wat aanleiding gee tot teenproduktiewe werksgedrag onder akademici. Verder blyk dit dat vorige navorsing nie genoegsame aandag gegee het aan een van die belangrikste onderliggende bronne van teenproduktiewe werksgedrag nie, naamlik sielkundige kontrakbreuk.

Met die gebruik van sielkundige kontrakbreuk as fokuspunt, was die doel van die huidige studie dus om die bronne en sielkundige meganismes te ondersoek wat kan verklaar waarom akademici teenproduktiewe werksgedrag toon. Die studie het spesifiek die invloed van akademici se persepsie van sielkundige kontrakbreuk op teenproduktiewe werksgedrag ondersoek. Dit is deur drie roetes ondersoek, naamlik die *stresreaksie-roete* – met veranderlikes soos beroepstres en negatiewe affek; die *onregverdigheidsroete* – met veranderlikes soos persepsie van geregtigheid en affektiewe verbintenis, asook die *wraakroete* – met die veranderlike, gevoelens van vergelding. Pligsgetrouheid is ingesluit as die enigste persoonlikheidsveranderlike.

Die studie het gebruik gemaak van 'n nie-waarskynlikheidsteekproef van 188 voltydse akademiese personeellede by drie geselekteerde openbare instellings vir hoër onderwys in die land. 'n *Ex post facto*-ontwerp is gekies om die gehipotiseerde verwantskappe te toets, en data is met behulp van 'n vraelys versamel. Teenproduktiewe werksgedrag is gemeet deur die selfverslagafwykingskaal (‘self-report deviance scale’) (Robinson & Bennet, 1995). Negatiewe affek is beoordeel deur die Emmons Mood-aanwyser (Dinner & Dimmons, 1984), terwyl beroepstres gemeet is met behulp van die Werkstresmaatstaf (‘Job Stress Measure') (Sakketou et al., 2014). Die ‘Organisational justice subscales of procedural and distributive justice’ (Le Roy et al., 2015) is gebruik om die persepsies van geregtigheid te meet. Met affektiewe verbintenis is Allen en Meyer (1996) se affektiewe verbintenisskaal gebruik, terwyl sielkundige kontrakbreuk vyf items gebruik het wat deur Robinson en Morrison (2000)

ontwikkel is. Wraakskaal (Wade, 1989) is gebruik om gevoelens van vergelding te meet, en laastens is pligsgetrouheid gemeet volgens die Groot Vyf Inventaris ('Big Five Inventory') (John, et al., 2008).

Item-, verkennende en bevestigende faktor-analises is gebruik om die psigometriese eienskappe van die instrumente te ondersoek. Strukturele vergelyksmodellering (SVM) is gebruik om die strukturele model te toets, met 'n goeie modelpassing wat verkry is nadat die model gewysig is om drie addisionele bane in te sluit. Die resultate het aangedui dat negatiewe affek en gevoelens van vergelding ’n statistiese positiewe effek op teenproduktiewe werkgedrag het, terwyl pligsgetrouheid negatief daarmee verband hou. Beroepstres en organisatoriese geregtigheid het onderskeidelik ’n positiewe en negatiewe verwantskap met negatiewe affek getoon. Die resultate toon ook dat negatiewe affek en affektiewe verbintenis onderskeidelik ’n positiewe en negatiewe effek op gevoelens van vergelding het. Sielkundige kontrakbreuk het na vore getree as 'n voorspeller met ’n statistiese negatiewe verwantskap met persepsie van organisatoriese geregtigheid, terwyl persepsie van organisatoriese geregtigheid ’n statistiese positiewe verwantskap met affektiewe verbintenis getoon het. Bevestiging is ook gevind vir die invloed van negatiewe affek op sielkundige kontrakbreuk. Geen ondersteuning is egter vir volgende hipotesis gevind nie: Die statistiese negatiewe invloed van affektiewe verbintenis op teenproduktiewe werksgedrag; die statistiese positiewe effek van sielkundige kontrakbreuk op beroepsstres; en laastens die statistiese positiewe verwantskap tussen sielkundige kontrakbreuk en gevoelens van vergelding.

Met die fokus op sielkundige kontrakbreuk as 'n onderliggende bron van verskillende sielkundige reaksies, dra hierdie studie by tot die literatuur oor die redes vir teenproduktiewe werkgedrag onder akademici in Suid-Afrika.

ACKNOWLEDGMENTS

Thank you, Francois for helping me understand SEM. God Bless you for your patience and humility!

To my family, this is my last formal educational qualification, from here, I have time for you.

To my late father, Matthew Tapindwa Chipunza – thank you for instilling the value of education in all of us your children - rest in eternal peace, Nyati!

To my mother, Selina Kajiwa Macheka – Chipunza – enjoy the fruits of your hard labour - may the Lord be with you at this moment in your life and may you be blessed with many more years!

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

1.1 Background of the study

Counter-productive work behaviours are intentional actions, such as theft and misuse of resources that are meant to harm an organisation's legitimate interests or its individual employees (Marcus & Schuler, 2004). Engaging in counter-productive work behaviour has potential negative effects on an organisation, such as loss in productivity or service delivery, low co-worker and supervisor-subordinate relations, reduced job and organisational performance, loss of revenue, reduced potential for contextual performance, costly litigations, bad publicity, and loss of competitive advantage. The presence of these negative effects results in the inability of an organisation to fulfil its mandate in society, for example, contributing to socio-economic development and provision for societal needs (Sackett, 2002). Reducing or preventing the occurrences of counter-productive work behaviour among employees is, therefore, essential for any organisation.

Known researchers on the construct of counter-productive work behaviour, such as Salgado (2000); Sackett (2002); Spector and Fox (2002); Marcus and Schuler (2004); Chernyk-Hai and Tziner (2014) agree that it exists across all types of organisations, as demonstrated by studies done in both private and public sectors, including institutions of higher learning. The Global Economic Crime Survey (2014) indicated that, while 51% of organisations in developed economies encounter counter-productive work behaviour challenges, such as fraud cases, 34% of them involve academic institutions that report high levels of academic fraud, such as plagiarism. For example, reports from Taiwan show that, doing personal businesses while on duty, favouritism or discriminating among specific students and wrong use of educational resources are rampant among academic staff (Ching et al*.,* 2017). Similarly, in the United Kingdom, Nevins-Bennet (2016) showed that deviant acts among academics are ranging from simple acts, such as absent without leave and apathy, to serious ones, such as student-academic staff relationships and lack of professionalism. This evidence indicates clearly that counter-productive work behaviours cannot be ignored within the higher education institutions.

The prevalence of counter-productive work behaviour is not peculiar to higher education institutions in developed economies alone, as noted above, but also among

those in developing contexts. For instance, evidence from Kenya (Waswa & Katana, 2017) shows that industrial actions and apathy among academics are no longer uncommon at the country's academic institutions in the country, while in Uganda, bullying, gossiping, especially, among academic staff are causes for concern (Kakumba et al*.,* 2014). In South Africa, there are numerous reports of university academics being investigated for fraud involving student funding and sexual harassment of students (Kekana, 2015; Tau, 2017); syndicates of academic and administrative staff are involved in selling university places and inappropriate use of resources (Peterson & Subroyen, 2017). Also noticed are unprofessional conduct, such as increase in plagiarism (Friedman, 2015); increase in publications in untrustworthy journals for promotion, colluding in publications, manipulating of students' marks and falsifying research (Vazquez, 2018; De Jager & Brown, 2010). These reported cases indicate how widespread is counter-productive work behaviour within the South African higher education sector, therefore, the urgent need to seek solutions to these behaviours cannot be overemphasised.

The above evidence on the prevalence of counterproductive work behaviour in tertiary institutions, globally, points to the need for investigating antecedents of such counter-productive acts. Knowledge of the factors influencing counter-productive work behaviour has ramifications for higher education sector institutions because remedies will involve well-designed intervention strategies. Designing appropriate strategic human resources management interventions, in areas, such as planning, recruitment, selection, transfers, placement, training programmes, implementing cost-reduction measures, and talent management have all been found to reduce the occurrence of counter-productive work behaviour (Spector & Miles, 2001; Martinko et al*.,* 2002). Despite these findings, there seems to be a gap regarding studies investigating the reasons behind these counter-productive behaviours among academics.

Most previous studies on antecedents of counter-productive behaviour have pointed out the role played by intrapersonal factors, such as personality traits (Tomlinson & Greenberg, 2005; Berry, Ones & Sackett, 2007), while other studies have focused on organisational factors, such as reward systems and leadership style (Lau, Au & Ho, 2003; Dunn & Schweitzer, 2005). Results from these studies have identified several organisational factors as antecedents to counter-productive work behaviours (Vardi & Wiener; 1996; Lau et al., 2003).

One organisational factor implicated in motivating counter-productive work behaviour which apparently, has not been given enough attention in terms of its nature and extent of its influence, is the breakdown of trust between employer and employees, especially the non-fulfilling of the unwritten dictates of a psychological contract. A psychological contract refers to individual employees' beliefs /expectations, created by an organisation, that relate to the terms of an unwritten exchange or agreement between employer and employees (Richard et al*.,* 2009). Keeping unwritten promises of the psychological contract between employer and employees has been found to have positive outcomes, for example, organisations can execute necessary changes easily (Paille, Grima & Dufour, 2015; Root, 2017). Breaking the psychological contract, however, has the potential of influencing employees' engagement in counter-productive work behaviour.

Psychological contract breach as one of the main underlying causes of counter-productive behaviours seems especially relevant within the context of academia. Terms of these contracts are quite fluid, given the fact that the academic sector is continuously undergoing periods of transformation (Viljoen, 2018). For example, in South Africa, the changing government policies on publications, the internationalisation of the industry, managerialism, budgetary constraints, increased student numbers, and their effect on teaching and workloads, are intensifying and putting pressure on academics (Theron & Dodd, 2011). These environmental and organisational changes constitute a context in which breaches of trust in relation to the psychological contract are likely to occur, resulting in several negative reactions, such as anger, feelings of betrayal and resentment – which can be associated with the development and occurrence of counter-productive work behaviours.

Given this scenario, the present study, unlike previous studies like Martinko et al*.,* (2002) which focused on personal antecedents, holds the view that, it is the breakdown in trust, especially the psychological contract breach perceptions, that is central to several explanatory variables and how they link together. The aim, of this study, therefore, will be to identify these contributory factors and their relatedness, as well as to explain counter-productive work behaviours among academics.

1.2 Research objectives

Through focusing on perceived psychological contract breaches, this study aims to examine the sources and psychological mechanisms that will explain why academics engage in counter-productive work behaviours. Three specific objectives are proposed. The first is to develop, using the construct of psychological contract breaches, an explanatory counter-productive work-behaviour structural model that could determine why academics engage in counter-productive work behaviours. Secondly, to empirically evaluate the proposed model and assess the fit of the model. Finally, to propose practical managerial strategies, based on the findings that can be used to prevent the occurrence of counter-productive work behaviours, among academics in higher education institutions.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The construct of counter-productive work behaviour has gained popularity in recent years, representing one of the significant emerging organisational concerns by both practitioners and academics (Fida et al., 2015). The popularity of the construct stems from the pervasiveness of counter-productive work behaviours in many organisations (Basran, 2012). There is no doubt that, counter-productive work behaviour has important negative effect or impact on both organisations and the people in the organisations. For example, counter-productive work behaviour has been found to cause organisational financial losses, annually (Robinson, 1995); to result in employee resignation due to stress (Vardi & Weitz, 2004); to reduce job performance (Sackett, 2002), and to tarnish the status and reputation of an organisation (Nasir & Bashir, 2012). These findings are also of significance in the higher education sector in South Africa and other parts of the world, where academics at institutions of higher learning are engaging in counter-productive behaviour at unprecedented levels. Against this background, investigating the antecedents of behaviours labelled as counter-productive could position organisations to expose and deal with the roots of such behaviour whether it is personal characteristics of people, organisational factors, or some combination of the two.

Marcus et al., (2016) observe that while the effects of counter-productive work behaviour are well-documented and the need to curb it is known, there has been controversy on the universality of the behaviours labelled ‘counter-productive’. The controversy surrounds issues, like the existence of overlaps in the labels, whether some antecedents of the construct can be isolated and whether some of the variables are more salient than others, in some environments. It is this controversy, and the need to contribute to further understanding of the construct, that justifies further scientific enquiry by industrial and organisational psychology experts in order to help organisations to utilise the correct interventions in overcoming counter-productive work behaviour.

2.2 Definition of 'counter-productive work behaviour'

In addition to the definition previously provided in Chapter 1, several other researchers have extended the conceptualisation of counter-productive work behaviour by calling it either, 'organisational misbehaviour' (Vardi & Wiener, 1996), 'organisational deviance' (Kidwell & Martin, 2005), 'anti-social workplace behaviour' (Giacalone & Greenberg, 1997), 'workplace aggression' (Nueman & Baron, 2005), 'workplace deviance' (Robinson & Bennet, 1995) or 'retaliatory behaviour' (Bies et al., 1997). From these definitions, although there seems to be some differences in how the construct, counter-productive work behaviour is explained, there is consensus that the behaviours must be both 'intentional' and 'harmful' to both the organisation and its members, since an organisation views the actions as going against its legitimate interests. This raises the question, whether some actions, such as non-compliance with rules or regulations, can be regarded as 'counter-productive work behaviour' since in this case the element of intentionally doing harm to the organisation seem not to be salient. According to Sackett (2002), however, if non-compliance is intentional, for example, violation of safety procedure, and results in some risk to the organisation and members, for example, increased costs due to injuries, then the action can be labelled 'counter-productive'. To contextualise the argument, in the academic context, if intentional non-compliance with the contractual rule that says one is not allowed to run own consultancy concurrently with academic work results in the university's reputation or legitimate interest being compromised, then, according to Sackett, that behaviour can be labelled as 'counter-productive'. Sackett's argument, however, does not leave room for some other intentionally non-compliance actions labelled as counter-productive work behaviours, which can be beneficial to the organisation, therefore, not necessarily harm it.

Some authors, for example, Spreitzer and Sonenshein (2004) argue that, not all counter-productive work behaviour is undertaken with bad intentions although they can be classified as 'deviant' as they go against the norms and legitimate interest of an organisation, they are undertaken in honourable ways. Such type of a behaviour labelled 'positive deviance or constructive deviance', stems from good intentions and as part of the pursuit of organisational goals (Umphress & Bingham, 2011). For instance, an academic staff member may be absent from work without leave, to go and negotiate and bring in some huge amounts of money through commissioned

research. In this situation, violating organisational norms would have served as a source of finding creative ways to contribute to the organisations' financial stability.

Based on the above arguments, the present study takes the view that, counter-productive work behaviour by academics are those specific actions that are intentional and harmful to both employees and the organisation, within an academic context. These behaviours can be mild, passive ones, for example, lacking teaching enthusiasm, or harmful ones to the organisation, for example, deliberate waste of organisational resources or discriminating against students (Ching et al*.,* 2017).

2.3 Dimensionality of counterproductive work behaviour

Early researchers, such as Hollinger and Clark (1983) and Robinson and Bennet (1995) on the concept of counter-productive work behaviour have stated that the concept is multidimensional. They maintain that it is a comprise of two distinct dimensions, organisational (CWB-O) and interpersonal (CWB-I) counter-productive work behaviour. Organisational counter-productive work behaviours comprise of intentional behaviours meant to harm the organisation and are categorised into minor behaviours labelled as 'production deviant', for example, leaving work early and serious ones labelled 'property deviant', for example, stealing from the organisation. Similarly, interpersonal counterproductive work behaviours are deliberate actions against other people in the organisation, and are classified into 'minor political aggressions', for example, showing favouritism and 'serious personal aggression' for example, sexual harassment and verbal abuse. Gruys (1999) concurs with the above categorisation but differentiated the dimensions which she labelled acts that detract from job performance, for example, intentionally producing poor quality work, from harmful acts in the workplace that are not directly related to job performance, for example, theft. These categorisations may have implications for researchers and human resources practitioners in academia. For example, an institution might be interested in an identification of academics who will engage in specific category of counter-productive work behaviours, and thus focus on those specific ones only.

From the above conceptualisation of the construct, Vardi and Wiener (1996) had minor variations that gave them three categories. They labelled their dimensions, first, Type S – are those behaviours intended to benefit the self and are internal to the organisation and its members, such as harassment and stealing. Secondly, Type O –

misbehaviours that are intended to benefit the organisation – these are like the positive deviant behaviours mentioned above by Spreitzer and Sonenshein(2004). Thirdly, Type D - behaviours are meant to harm others or the organisation itself as a form of revenge, such as destruction of company property. What is peculiar about these authors' dimensions are the issues of self-benefit and labelling some of the behaviours as a form of revenge. Revenge responses are a result of blame attributions by an individual, and, according to Murray (1999), they can be shown in acts of covert or overt counter-productive behaviours.

Linked to the covert and overt labels is the viewing of counter-productive work behaviour as part of job performance (Fox et al*.,* 2001). These researchers argue that, counter-productive work behaviour comprises of a spectrum of actions that harm the organisation or employees, which come from a lack of motivation to abide and follow the normative organisational rules or expectations. The lack of motivation could be a result of some perceived negative outcome by an employee, such as not being promoted, or to what the employee attributes the source of such negative outcome. The source may be external (organisational) or internal (individual). Either way, the source may, therefore, motivate the individual employee to violate norms, rules or expectations of the organisation and engage in counter-productive work behaviours. Based on such conceptualisation, Spector and Fox (2002) categorised counter-productive work behaviour as either active, for example, theft and aggression, or passive, for example, withdrawal. This distinction between active and passive counter-productive work behaviour portrays, on one hand, counter-productive work behaviour as retaliatory when an individual employee engages in it after attributing perceived negative outcomes to the organisation's fault. On the other hand, an employee engages in self-destructive behaviours such as lower performance and absenteeism, when they attribute negative outcome to themselves (Martinko et al*.,* 2002). This conceptualisation slightly varies from the previous ones, in the sense that, it adds the dimension of self-destructive counter-productive work behaviours, which, therefore, is directed at self and not others.

The above conceptualisations of counter-productive work behaviours, by different authors on the multiple dimensionalities are clear indications that, the construct is complex. Although there are different dimensions, there is an overlap of the examples of specific counter-productive behaviours under the different dimensions. Based on

this observation, the current study will apply the taxonomy of CWB-O and CWB-I and add the CWB-S (self-destructive) because most of the examples of counter-productive work behaviours mentioned in all the above dimensions fall within these three. In addition, research shows that the behaviours are common and, therefore applicable to most academic staff situations in institutions of higher learning (Ching et al*.,* 2017).

2.4. Theorisation and hypotheses development

Early approaches to account for the antecedents of counter-productive work behaviours were, among others, based on the biology standpoint and the psychological viewpoint (Taylor et al*.,* 1973: Akers, 2012; Omoregie, 2014). For the biology viewpoint, the argument was that certain physical features determine counter-productive work behaviours, for instance, low foreheads and protruding jaws. (Klotz and Buckley (2017). The psychological orientation view (Sheldon & Stevens, 1942), on the other hand, suggests that certain mental problems are responsible for counter-productive work behaviour. These early viewpoints have been criticised for being too simplistic because engaging in a counter-productive work behaviour involves complex psychological processing and the interaction of several issues/variables, and not merely the function of some such as protruding jaws or some mental challenges (Chernyak-Hai & Tziner, 2014; Eschleman et al*.,* 2015).

This criticism resulted in a proliferation of researchers considering alternate and more detailed and sophisticated psychological explanatory approaches that would focus on the relationship between different factors, to explain counter-productive work behaviour. For example, Berry et al*.* (2007) have focused more on the internal aspects of an employee, arguing that employees with certain personality traits are more likely to engage in counter-productive work behaviours. Using mainly the 'five factor model', authors, such as Jensen and Patell (2011) showed that employees with high levels of agreeableness or acquiescence and narcissism predict counter-productive work behaviours because their strategies of dealing with, for instance, stressors or emotions are not the same as those who have personality traits such, as emotional stability and conscientiousness.

Related to the internal factors' literature, there is evidence that differences in locus of control (Storms & Spector 1987), attribution style (Kent & Martinko 1995) and negative affectivity (Chan et al*.,* 1999) are responsible for employees engaging in counter-

productive behaviour. With these traits, there is an acknowledgement that the differences in the cognitive processing or interpretation of events, in terms of cause-effect relationship, are mainly responsible for the employees engaging in counter-productive work behaviours. For instance, Storms and Spector (1987) demonstrated that employees high in external locus of control are more likely to exhibit counter-productive behaviours than those with internal locus of control. Similarly, Martinko and Gardner (1982) make the case that employees with pessimistic attribution styles, which are a sign of learned helplessness, are related to self-destructive counter-productive work behaviours such as depression-avoidance. Beyond these, other notable antecedents that have been studied and found related to counter-productive work behaviour are emotions. For example, Neuman and Baron (2005) provided an integrated model of counter-productive work behaviour in which negative emotion played a central role. Similarly, negative affectivity has been studied widely in relation to perceptions of stress, injustice and counter-productive work behaviours (Spector & O'Connell, 1994). Judging by the ongoing research on counter-productive work behaviour, this internally based approach seems to be limiting the debate on the subject, hence, discouraging exploration of organisational or workplace factors.

The significance of workplace environment as stimulus for counter-productive work behaviour has also received much attention in the past years. Spector and Jex (1998) suggest that situational conditions external to the employee, such as inflexible work rules and procedures, leadership style, reward systems, and task difficulty can cause employees to react with negative emotions, become stressed, develop perceptions of injustice, leading them to engage in counter-productive work behaviours. Similar studies have demonstrated how specific features of the organisational context, such as its culture and politics cause perceived psychological contract breaches and the subsequent development of counter-productive work behaviour (Rosen, Chang, Johnson & Levy, 2009). Previous research also suggests that, perceptions of organisational injustice triggered by certain events, such as implementation of change and distribution of outcomes were the most common causes of counter-productive work behaviours (Ambrose et al*.,* 2002).

Recent studies (Paille et al*.,* 2015; Malik & Khalid, 2016; Kraak et al*.,* 2017) have provided integrated models of antecedents of counter-productive work behaviours, demonstrating the relationship between individual and organisational factors in

influencing counterproductive work behaviours. Few studies, with contradicting results have indicated that there is no clear evidence of organisational factors predicting certain deviant behaviours (Robinson & Greenberg (1998). The integrated perspectives, however, suggest that both individual and workplace factors influence an employee to engage in counter-productive work behaviours and this viewpoint has gained prominence in recent years (Rosen et al., 2009). This has resulted in various models being developed by different researchers to explain antecedents of counter-productive work behaviour. These variations indicate that, to capture all possible latent variables, suggested in literature, in one study is sometimes not possible. Researches, however, continue to develop models that attempt to mirror reality within a context, with the understanding that other studies can further expand on where other researchers had left off.

2.5 Proposed routes to counter-productive work behaviour

As indicated in Chapter 1, the present study, unlike previous ones, acknowledges the central role played by broken relationship (trust), especially, the psychological contract breaches or perceptions of such breaches, as precursors to counter-productive work behaviour among academics. According to the knowledge of the researcher, this is one of the first studies to examine the influence of perceptions of psychological contract breaches on counter-productive work behaviours, in the context of an employer-employee exchange relationship, within education institutions.

Psychological contract has been used in a variety of studies to understand employment relationship (Rousseau, 2000; Guest & Conway, 2002). A psychological contract is based on the social exchange and social contract theories; these emphasise a mutual commitment to fulfilling promises by two parties, in this case, employees and employers (Cropanzano & Mitchell, 2005). The mutual commitment by both parties means that employees believe they have contributions they owe the employer that they must fulfil, and the same applies to employers (Robinson et al., 1994). The psychological contract is based on mutual promises, therefore, it can either be fulfilled, or not. A psychological contract breach occurs when an organisation fails to keep its promises made to employees (Rousseau, 2000; Griep, Vantilborgh & Jones, 2018). Based on these facts, the present study, unlike previous ones, suggests different routes or paths which, when combined, could describe the regulatory

psychological mechanisms that can be used to explain counter-productive work behaviour among academics.

Firstly, the study argues that, certain unfavourable organisational experiences result in perceptions of trust that has been broken (psychological contract breach). These perceptions can trigger anger then elicit retaliatory feelings, leading to counter-productive work behaviour - the revenge route. Most of the counter-productive work behaviours following this route are assumed to be focused more on doing harm to the organisation or other individuals, through actions, such as inappropriate use of resources, fraud, and gossiping.

Secondly, psychological contract breaches result in academics experiencing injustice perceptions. Perception of injustice might reduce the level of attachment (affective commitment) an academic has with the institution; resulting in counter-productive work behaviour – injustice route. Within this route, the counter-productive work behaviours are not necessarily meant to harm the organisation, but are passive in nature, signalling employees distancing themselves from the organisation; examples are lack of enthusiasm and lack of motivation.

Thirdly, the study argues that, perceptions of psychological contract breach elicit occupational stress which in turn triggers negative emotions, leading to engagement in counter-productive work behaviour - the stress reaction route. Counter-productive behaviours from this route demonstrate a self-destructive side of the employee, leading to emotional burnout, negative social interactions, absenteeism and depression. The study also argues that the negative emotions affect perceptions of psychological contract breach.

Lastly, the only personal characteristic included is conscientiousness. The study contends that, employees low in conscientiousness will engage in counter-productive work behaviour.

It is suggested that employers who understand these antecedents and how they interact to influence counter-productive work behaviour are likely to design appropriate strategies and provide appropriate environmental experiences for employees to avoid the occurrence of counter-productive work behaviours. The following section, therefore, discusses the above-mentioned three routes and the related antecedents thereof, in terms of how they are interlinked to influence counter-productive behaviour.

2.5.1 Negative emotions (affect) and counter-productive work behaviour

The abundance of research on the role played by negative or positive emotions on work behaviour highlight the need to consider these emotions in our understanding of the propensity of employees to engage in counter-productive work behaviour (Van Katwyk et al., 2000). A fundamental issue to consider in the context of this study is whether negative emotions result in some deviant behaviour. Initial studies by Chen and Spector (1992) established that frustration, as a negative emotion was significantly related to interpersonal aggression, hostility, gossiping, blaming others or making sarcastic remarks about others – all forms of counter-productive work behaviours that indicate how negative emotions make it difficult for interactions between employees . Using the conservation of resource theory, Bolton *et al.* (2012) provided an analysis of how negative emotions lead to emotional exhaustion – a situation which represents depletion and threatening of a person's valued resources. Emotional exhaustion is a psychological appraisal of resources loss; thus, it motivates individuals to use the little remaining resources to prevent further loss. They do this by either psychologically or physically withdrawing from the situation (Ito & Brotheridge, 2003) or from other people through depersonalisation, or from the organisation through disidentification (Elsbach & Bhattacharya, 2001). Depersonalisation is a dimension of burnout that helps emotionally exhausted people to remove themselves from any demands that may further deplete their resources (Leiter, 1993). In terms of depersonalisation, we can argue that, when academics get emotionally exhausted, they would depersonalise themselves by adopting defensive strategies, such as withdrawing themselves from the social demands of the work environment through, for example, escapism from attending meetings or refusing to do some tasks. These actions are passive forms of counter-productive work behaviours.

On the other hand, disidentification reflects self-perception of cognitive separation between one' identity and those of his or her organisation (Lane & Scott, 2007). It entails cognitive and emotional detachment from the organisation. A research done by Elsbach and Bhattacharya, (2001) found an association between disidentification and counter-productive work behaviours, such as harshly criticising the organisation and boycotting organisational events. The above evidence shows that, negative emotions are inherently unpleasant, hence, employees tend to perform corrective behaviours to

ameliorate the effect of negative emotions through engaging in passive counter-productive work behaviours. Thus, we hypothesise that:

Hypothesis 3: Negative emotions positively affect counter-productive work behaviours.

2.5.2 Affective commitment and counter-productive work behaviour

In line with the attitudinal commitment theory, which argues that feelings of involvement with an organisation contribute to an individual's commitment to the organisation, affective commitment denotes employees' desire to remain part of their organisation and in turn a willingness to exert effort on the part of the organisation (Meyer et al., 2002). It represents a desire-based emotional attachment to an organisation because of the belief and identification with the organisation's goals and core values (Mowday et al., 1982; Gruen et al., 2000; Bansal et al., 2004). The above definition implies that affective commitment represents a psychological need, that is, the need to experience attachment, therefore, among academics, it is likely to have implications on a variety of behaviours, if the emotional attachment is not felt anymore or is minimal. Thoresen *et al.* (2003) supported this when they found that employees with strong affective commitment experience more positive affect than those who are less committed. The fact that studies have empirically linked negative affect to counter-productive work behaviour (Dalal, 2005), means one can argue that, this provides a reason to suspect that the more academics experience less attachment to their institutions, the more they are likely to engage in passive counter-productive work behaviours. These are not necessarily meant to harm the organisation, but to 'protest' at the lack of connection between academics' values and those of the organisation. This argument finds support in a study done by Ramshinda and Manikandan (2013) who found that affective commitment relates to counter-productive work behaviours, such as unwilling to undergo training and not sharing information needed by co-workers. The authors argue that, less affectively committed employees tend to develop negative attitudes and beliefs about the organisation; they see the organisation's values as not being congruent with their own. As a result, they proactively engage in counter-productive work behaviours like apathy. Academics feeling less emotionally attached to their institutions are more likely, for example, to start showing unwillingness to participate in developmental workshops, or not going the extra mile to help the organisation.

In support of the above, research also shows that employees who associate with their organisation and its values are more likely to be loyal, work long hours, are engaged and very productive (Alvino, 2014). Alternatively, when employees feel detached, experience injustice, do not receive opportunities for advancement, for example, they are likely to lose the emotional attachment or bond to the organisation (Mercurio, 2015). To further substantiate the latter, Aguado (2017) contends that affective commitment is negatively correlated with commission of counter-productive work behaviours, such as absenteeism. Several studies have demonstrated that less harmful behaviours, such as low performance and reduced organisational citizenship behaviour are associated with low affective commitment (Mowday et al., 1982; Mathieu & Zajac, 1990; Meyer et al., 2002). It is, therefore, possible to suggest that, when the affective commitment levels of academics, for example, from perceived injustice, becomes low, they feel some incongruence between their own values, and the goals of the organisation. Academics, then do not see the need to invest more of their resources, for example, effort and time, instead they engage in subtle counter-productive work behaviours, but which clearly indicate less commitment to formal rules, such as wrong use of educational material, or casual checking of students' work. Based on this analysis, it is hypothesised that:

Hypothesis 4: Affective commitment negatively affect counter-productive work.

2.5.3 Occupational stress and negative emotions (affect)

Recent literature (Fida et al., 2015) highlights that work stressors are associated with the development of negative emotions. Work stressors are dynamics within the work environment and that make it hard for employees to execute their jobs; examples are inadequate resources and or poor support. The conservation resources theory (Hobfoll, 2002) contends that within the work context and employees have an inherent need to acquire, maintain, and protect their resources - contextual (for example, support) or personal (for example, abilities and skills). This research argues, therefore, that when academic employees experience high levels of occupational stress, that is, when they feel they are losing their resources, such as control over their jobs, they feel less capable and are susceptible to job strain - an aversive reaction to a stressor (Jex Spector & Beehr, 1991). These negative reactions are psychological strain responses, such as anxiety and frustration. Once academics experience such strain

reactions, they seek coping strategies to prevent current or future resource losses. The common strain response they are likely to show are negative emotional reactions, such as anger, anxiety, and frustration. Fida et al., (2015) posit, in support of the above argument, that work stressors trigger cognitive responses, in the form of cognitive appraisals, and affective responses in the form of negative emotions. Experiencing negative emotions, from stress, by employees, however, has been found to be influenced also by the dispositional traits of an individual (Martínko et al., 2002). Despite this finding, and, based on the above analysis, we hypothesise that, when academic employees are stressed, within their wok context, negative emotions ensue. As such, we formulate the following hypothesis:

Hypothesis 5: Occupational stress positively affect negative emotions.

2.5.4 Psychological contract breach and occupational stress

Anything that an employee interprets as threatening to his / her psychological or physical well-being is regarded as a job stressor and requires some remedy (Jex, Spector & Beehr, 1991; Spector & Fox, 2002). When academics, thus, interpret certain unpleasant organisational experiences, such as lack of career-development support, as lack of sincerity on the part of the institution in meeting its obligatory duties (perceived breach), they are likely to feel psychologically threatened. Experiencing contract breach has been found threatening to the psychological, job security and well-being of employees - hence, some describe it as causing stress-related symptoms among employees (Duran, Woodhams & Bishopp, 2018). This link between psychological contract breach, stress and well-being can be understood from a conservation of resources theory (COR) perspective, which states that, individuals protect their required resources (for example, personal characteristics, conditions, effort and time) and that perceptions, or threats to, or actual loss of these valued resources (breach perceptions) can trigger negative consequence (Halbesleben & Bowler, 2007; Hobfoll, 2002). Being consistent with this theory, makes it is possible to argue that, when academics experience unmet obligations – that is, perceived loss of valued resources – they are likely to have high stress levels.

Other studies have also attested to the relationship between psychological contract breach and stress within the COR perspective. For instance, Rehman et al., (2012) note that psychological contract breach leads to fatigue, and it is the fatigue that lowers

the personal resources a person needs to cope with the breach perceptions- leading to high levels of stress. In this regard, stress can be considered an outcome of negative emotions resulting from psychological contract breach because it represents a loss or potential loss of valued resources - which is regarded as a stressful event (Restubog et al., 2015). Based on this, we can hypothesise that, when academics perceive that one or more organisational obligation(s) are breached, they enter a thorough cognitive appraisal process during which they evaluate the resources they may have lost as a result of the breach (Morrison & Robinson, 1997). Perceptions of resources lost trigger negative emotions, which in turn lead to stress. We can therefore hypothesise that:

Hypothesis 6: Psychological contract breach perceptions positively affect occupational stress.

2.5.5 Psychological contract breach perceptions and organisational justice

Psychological contract breach revolves around perceived justice or fairness. According to Greenberg (1990) organisational justice is a social exchange process that describes, firstly, peoples' subjective evaluations of fairness in organisations in relation to how outcomes, such as profit is distributed (i.e. distributive justice). Secondly, justice examines how fair the procedures used to decide who should receive outcomes (i.e. procedural justice). Thirdly, justice involves the level of respect one feels one received, during and after fairness-related decisions are made (i.e. interactional justice). Several studies have documented the effects of psychological contract breach perceptions on justice perceptions. For example, Noblet *et al.* (2009) found perceptions of breaches in psychological contract strongly relate to variations in organisational fairness experienced by police officers. Similarly, Rosen *et al.* (2009) identified features of the organisational context, such as politics, that were associated with perceptions of psychological contract breach and subsequent procedural justice perceptions. Zhang and Agarwal (2009) further substantiated this by asserting that psychological contract breach perceptions had an impact on distributive and procedural justice. In a longitudinal study, Robinson and Morrison (2000) found that perceived contract breach was associated with more intense feelings of violation when employees attribute the breach to purposeful reneging by procedurally unfair employer, while Kickul et al. (2001) found a three -way interaction between contract breach, interactional and procedural justice. Morrison and Robinson (1997) state that,

when a contract breach occurs, employees enter a sense-making process that determines the extent to which the fairness of the breach is evaluated. In the context of this study, therefore, it is possible to suggest that, when academics experience psychological contract breach perceptions, they view this as unfair treatment by the organisation because one party has broken mutual promises made. It is logical, thus, to assume that, academics' perceptions of psychological contract breach may be linked to perceived organisational justice. The following hypothesis is, therefore, formulated:

Hypothesis 7*: Perceptions of psychological contract breach negatively affect perceived organisational justice.*

2.5.6 Justice perceptions and affective commitment

Affective organisational commitment reflects an individual's desire to remain part of the organisation, a willingness to exert effort on behalf of the organisation, and a belief in and acceptance of the values and goals of the organisation (Meyer et al., 2002). Recent studies by Sieger, et al., (2011) postulate that there is a relationship between organisational justice and affective commitment. This bond tends to occur because the organisation has treated the employee in a positive and fair manner, resulting in the employees feeling a psychological and emotional attachment to the organisation (Allen & Meyer, 1996). In this regard, we can suggest that, academics who perceive that they are not treated fairly are likely to develop less affective commitment to the organisation. Indeed, several studies have demonstrated that when employees perceive high levels of injustice within their work context, they are most likely to decrease their levels of affective commitment to the organisation (Mowday et al., 1982; Lowe & Vodunovich, 1995; Meyer et al., 2002). Furthermore, Purang (2011) showed that fair and favourable outcomes (distributive justice) exact and close fit null hypotheses on page 28 an individuals' attachment to the organisation or their affective commitment. Balassiano and Salles (2012), in a study in a teaching and research institute, confirmed the theoretical assumption, that perceptions of distributive and procedural justice are antecedents / determinates of affective organisational commitment. In addition, both distributive and procedural justice were found to have an impact on commitment of employees (Lambert et al., 2007). Some meta-analytical studies by Cohen-Charash and Spector, (2001) and Colquitt et al. (2001), although,

they did not specify the type of commitment affected, they however, corroborated the above-mentioned studies when their results showed that, interactional, distributive and procedural justice were positively associated with organisational commitment. Based on all this evidence, this study argues that, injustice perceptions by academics lead to less attachment and bonding with the organisation - that is, lower levels of affective commitment because the academics feel emotionally detached and therefore distant to their own organisation (the university). This leads to hypothesise that:

Hypothesis 8*: Organisational justice positively affect affective commitment.*

2.5.7 Feelings of retaliation/revenge and counter-productive work behaviour

The revenge or feelings of anger, whether directed towards the organisation or individual, are well-thought-out, well-calculated courses of actions and in most cases, preceded by a strong desire of doing harm to or hurting the wrongdoer (Bradfield & Karl, 1999). The authors add that, retaliatory or revenge cognitions represent some motivational intent and they come before the enactment of harmful behaviours that are directed at the target of revenge. To support this finding, researchers, such as Ishaq and Shamsher (2016) showed that the resultant harmful actions are counter-productive work behaviours, such as fraud (CWB-O) and harassment (CWB-I). Similar studies by Terris and Jones (1982) found that retaliation or revenge feelings were the major precursors to employees' involvement in theft, harassment, and insubordination. These studies seem to suggest, therefore, that the relationship between psychological contract breach and counter-productive work behaviours is mediated by retaliation or revenge feelings. Within the academic context, we can assume that, academics who perceive psychological contact breaches, such as changes in publication policy, or sudden budget cuts for international travelling, experience anger and betrayal – which trigger some cognitive motivational intent (thoughts of revenge) to retaliate against the 'breacher' (the institution). The revenge cognitions, hence, occur prior to enactment of behaviours meant to harm the organisation. In this case, revenge cognitions or retaliatory feelings lead to counter-productive work behaviours. In this regard, the following hypothesis was formulated:

Hypothesis 9: Feelings of retaliation positively affect counter-productive work behaviour.

2.5.8 Negative affect and psychological contract breach perceptions

While negative emotions, such as anger, frustration, anxiety, fear, sadness and sense of rejection are associated with counter-productive work behaviours as indicated in the above sections, they are also assumed to have an influence on perceptions of psychological contract breach. The argument presented in this study is that, when academics develop negative affect (emotions), these moods influence their interpretation of organisational experiences that threaten the psychological contract. Kennedy *et al.* (2004) affirm this assertion when they note that negative affect from perceptions of injustice or stress, coupled with negative-attributional style lead to perceptions of psychological contract breach.

This influence of negative affect on psychological contract breach is best captured by the concept of 'affect infusion' from the Affect Infusion Theory (Forgas, 2008). According to Forgas (1994: 39) affect infusion is "the process whereby affectively-loaded information exerts an influence on and becomes incorporated into the judgmental process, entering into the judge's deliberations and eventually colouring the judgmental outcome." The author continues that, negative affect can be regarded as a piece of information. An individual can use this information (negative affective state) to reflect on past events and eventually conclude that their psychological contract has been breached. In addition, negative affect can influence judgements of breach via primacy recency effect – meaning that, it causes selective attention, retrieval and encoding of information, thereby directing interpretations (Vantilborgh et al., 2016). In the context of the present study, we can therefore suggest that, academics who experience negative affect (emotions) are more likely to reflect on past events and judge that their psychological contracts have been breached, because their negative affect states translate into them (academics) paying more attention to recent negative occurrences in the work environment. It is thus hypothesised that negative affect or emotions stimulate academics to monitor their work environment for signals indicating discrepancies in their psychological contract- hence the likelihood of them perceiving psychological contract breach. The following hypothesis is thus formulated:

Hypothesis 10: *Negative affect positively affect perceptions of psychological contract breach.*

2.5.9 Psychological contract breach and feelings of retaliation

The employment relationship is a success when the psychological contract is fulfilled (Restubog et al., 2015). A breach of the psychological contract, that is, when promises are not fulfilled, has negative effects, such as the development of revenge or retaliation feelings. Bies *et al.* (1997) showed that the act of revenge is a response to certain situations in organisations that involve issues, like goal obstruction, violation of promises, or attacks on power and status. In these situations, academics are likely to develop feelings of revenge towards their institution when they perceive them as psychological contract breaches. They feel their statuses have been reduced, in the form of a reduction in reward, or where their efforts to achieve their goals and career development opportunities, are thwarted. Restubog *et al.* (2015) substantiate this assertion when their study identified psychological contact breach as the most likely factor linked to revenge ideations as employees build emotions of disappointment, frustration and anger. Bordia et al., (2008) had earlier reported, in line with the retaliatory theory (Folger & Skarlicki, 1998) and revenge theory (Bies et al., 1997), that the common response triggered by psychological contract breach perceptions are feelings of revenge. The theories state that revenge follows a path involving violated expectations. Violations are referred to as “affective and emotional experience of disappointment, frustration, and anger” that employees potentially exhibit in response to breach (Bradfield & Karl, 1999: 609). The above studies suggest that, academics undergo some sense-making process after perceiving psychological contract breach, to decide whether to hold the institution accountable. If the academic blames the institution, he or she develops heightened feelings of violations - and is more likely to retaliate or revenge. Other researchers such as Robinson and Morrison (2000) also showed that, revenge or retaliatory attitudes as a result of a perception of psychological breach contract by employees, can be directed at the organisation or at individuals within the organisation, depending on the perceived source of psychological contract breach. For example, academics who perceive that the source of psychological contract breach is management, are more likely to have attitudes of revenge towards the organisation, unlike when the perceived breach source are individuals, such as the head of department or supervisor. In this regard, it was hypothesised that:

Hypothesis 11: Perceptions of psychological contract breach positively affect feelings of retaliation or revenge.

2.5.10 Conscientiousness and counter-productive work behaviour

The personality traits of conscientiousness describe an individual who is hardworking, responsible, persistent, self-controlled, self-disciplined, dutiful and detailed-oriented (Costa & McCrae, 1992). Authors of the trait in relation to counter-productive work behaviour have presented two arguments. The first line of argument is from those authors who content that, conscientiousness acts as a buffer or a moderator between organisational or employee experiences and counter-productive work behaviour. Specifically, authors such as Bowling et al., (2011), for example, report on the moderating effect of conscientiousness on issues between organisational justice and counter-productive work behaviour. Others, like Colbert, Mount, Harter, Witt and Barrick, (2004) imply that conscientiousness moderates the relationship between perceptions of an organisation's developmental environment and the behavioural outcome of withholding effort. Furthermore, Eschleman et al., (2015) contend that conscientiousness moderates the relationship between change in work stressors and change in counter-productive work behaviour. Based on this evidence, and, although not included in the final structural model, the present study assumes that there might be a possible moderating effect of conscientiousness between perceptions on psychological contract breach and counter-productive work behaviour.

The second line of argument states that because the conscientiousness trait is associated with self-control, reasonableness and consensual compliance to norms, it has a direct relationship with several behavioural actions, in different situations. Barrick, Mount and Judge (2003) concur with this assertion by maintaining that, conscientiousness is a valid predictor of employee behaviours across jobs because it is associated with goals related to task-achievement. This means that, even within the higher education context, among academics, conscientiousness can be a monitoring mechanism to predict counter-productive work behaviour. Several studies have provided compelling evidence that, the trait of conscientiousness is directly associated with engaging or not engaging in counter-productive work behaviour. For example, Bolton et al. (2012) discovered that low conscientiousness predicts counter-productive work behaviours of theft and passive ones, such as withdrawal. Similarly,

Penney et al. (2011), using the conservation of resources theory, assert that, on one hand, highly conscientious employees are more likely to deploy their resources towards actions that help them to meet their set goals, such as working fast and helping others. On the other hand, those employees low in conscientiousness are not task-focused and, therefore, do not expend their resources in ways that address work-related demands. As such, they waste time, making fun of hardworking co-workers, and constantly arguing with others – behaviours described as counter-productive. In a similar study on retail employees and counter-productive work behaviours, Lokz (1999) identified, low conscientiousness as the best predictor of employees' absenteeism, lack of cooperation and taking of long breaks; Mount et al. (2005) also observed a direct relationship between low conscientiousness and organisational counter-productive work behaviours, such as taking property without permission and taking longer breaks than permitted. Most of the counter-productive work behaviours reported in these studies were found in academic institutions, among academic staff members (Ching et al., 2017). In this regard, it is possible to predict that, the conscientiousness levels of academic employees can be associated with counter-productive work behaviour. Low conscientiousness, thus, will predict counter-productive work behaviours - passive behavioural, organisational and those directed at individuals. Thus, we hypothesise that:

Hypothesis 12: *Conscientiousness negatively influences counter-productive work behaviours.*

2.6. The proposed counterproductive work behaviour structural model

In the manifestation of counter-productive work behaviour, as indicated in the preceding arguments, factors such as perceptions of psychological contract breaches, occupational stress, negative emotions and feelings of retaliation have a positive influence. Affective commitment, conscientiousness and perceived organisational justice have negative influence on incidences of counter-productive work behaviour. The combined hypothesised relationships in these variables result in the structural model in Figure 2.1. Figure 2.1 therefore, represents a microcosm of an overarching substantive research hypothesis describing how the discussed latent variables are causally linked to each other and, finally lead to counter-productive work behaviours.

As previously alluded to in the introductory remarks, there could be many possible explanations to account for the occurrence of counter-productive work behaviours, therefore, the present proposed structural model will not be regarded as all inclusive. It represents what the researcher assumes is a plausible explanation of the structural relationships of ‘some’ latent variables that could be used in understanding the process of engaging in counter-productive work behaviours, by academics. It is also unique in that it identifies three routes to counter-productive work behaviours, emanating from perceived psychological contract breach. The routes are the retaliatory route, the justice perception route and the stress reaction route, with a negative loop from negative emotions to psychological breach perceptions.

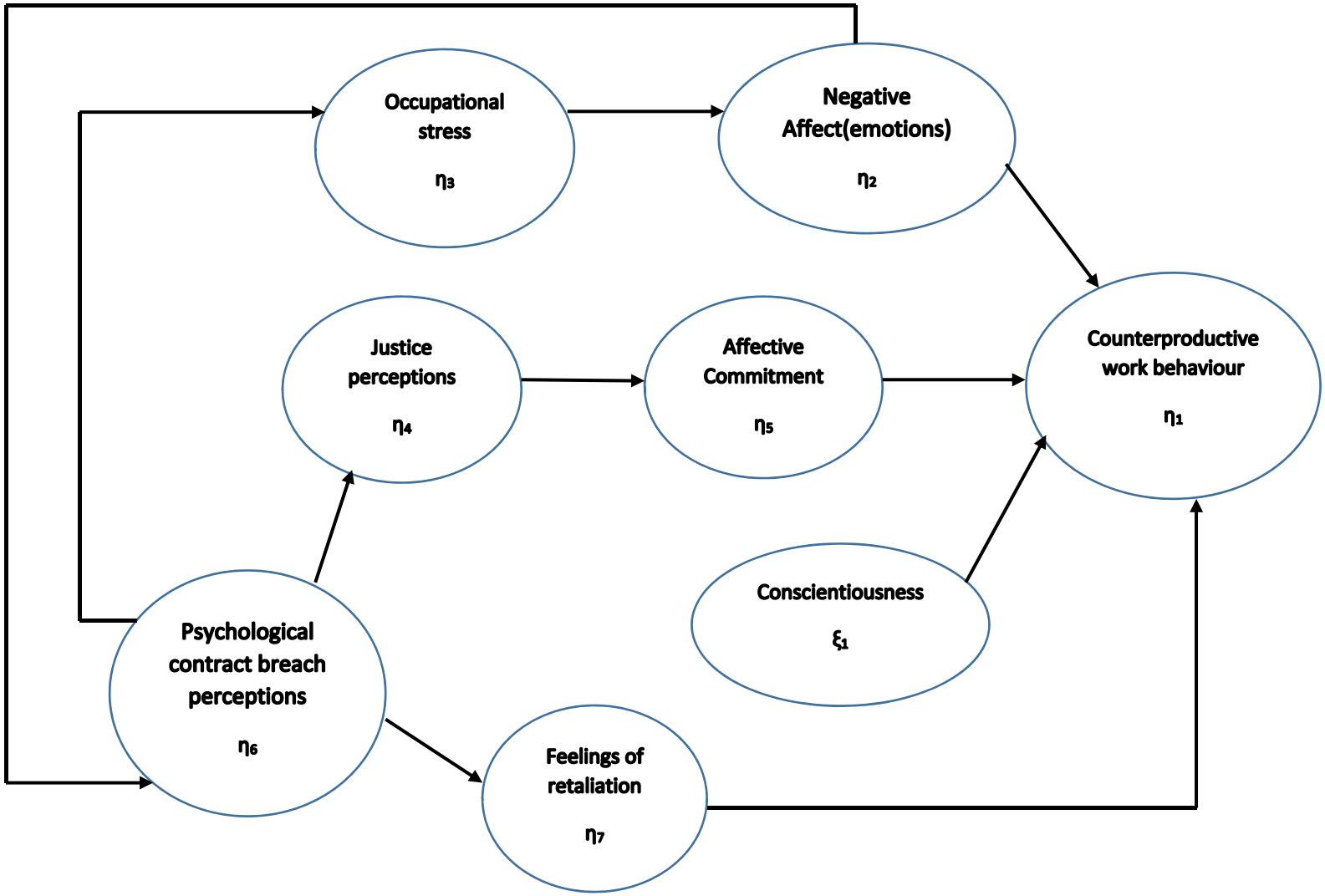


Figure 2.1 The Proposed Counterproductive Work Behaviour Conceptual Model

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

Chapter 1 discussed the recent interest by industrial and organisational scholars in the construct of counter-productive work behaviour, especially its prevalence among academics. Considering the potential effects these behaviours can have on organisations, and hence, the need to reduce their occurrence, the present study sought to provide an understanding of the antecedents of counter-productive work behaviour, using a sample of academics.

Chapter 2 provided a review of the relevant literature – in other words, a theoretical argument on how various variables are interwoven to explain the antecedents that influence the occurrence or engagement in counter-productive work behaviours. The chapter highlighted numerous arguments to assist in understanding these antecedents and proposed three routes to counter-productive work behaviours, all originating from psychological contract breach. Through this, the study attempts to illuminate the psychological mechanisms that drive counter-productive work behaviour without over emphasising personal dispositions as in some previous studies. This will afford employers and practitioners the opportunity to design organisational and individual strategies to ameliorate the occurrence of counter-productive work behaviours.

The current chapter provides some details of the methods and design employed in this study when testing the proposed structural model, and their justifications. Specifically, the chapter describes the procedure that was employed to determine the validity of the methods used to answer the research's initiating question. A thorough description of the methodology is a panacea for scientific rigour; thus, the chapter will focus on the substantive research hypothesis, statistical hypotheses, research design, sampling, population (participants), data collection, statistical analyses, and validity of the instruments used.

3.2 Research purpose and objectives

The main purpose of this study was to explain the inter-relatedness of possible factors driving the occurrence of counter-productive work behaviour of academics in South African higher education sector. The objectives of the study were the following:

a) To develop a conceptual model indicating the different relationships of the variables causing some variance in psychological processes underlying counterproductive work behaviour among academics;
b) To test the fit of the structural model;
c) To evaluate the significance of the hypothesised paths in the model;
d) To consider the modification of paths in the model by inspecting the modification indices and how the possible modification of paths is supported theoretically.

3.3 Substantive research hypothesis

Hypotheses are declarative statements that indicate the relationship between two or more variables that are yet to be tested (Blumberg et al., 2008). When stating hypotheses, a researcher is expressing his or her beliefs about the tentative relationship that exists between variables in such a manner as to demonstrate the intention of the relationship. When formulating hypotheses, at least two variables should be involved, written in a cause-effect relationship (Bless et al., 2016). In addition, Dawson (2006) explains that hypotheses should be related to the research question and can be falsifiable. The formulation of hypotheses for this study began with the theorisation of the possible relationships between the key variables, which led to the development a structural model presented in Figure 2.1.

The overarching exact fit substantive research hypothesis was that – '*the structural model proposed provides an exact account of the psychological mechanisms causing differences in the occurrence of counter-productive work behaviour(s) among academics*.' The close fit hypothesis was that - *the structural model proposed provides a close account of the psychological mechanisms causing differences in the occurrence of counter-productive work behaviour(s) among academics*. These two represented hypothesis 1 and 2 for the study. The overarching research hypothesis was, however, further divided into 10 path-specific substantive research hypotheses as follows:

Path specific hypothesis 3: Negative emotions positively affect counter-productive work behaviours.

Path specific hypothesis 4: Affective commitment negatively affect counter-productive work.

Path specific hypothesis 5: Occupational stress positively affect negative emotions.

Path specific hypothesis 6: Psychological contract breach perceptions positively affect occupational stress.

Path specific hypothesis 7: Perceptions of psychological contract breach negatively affect perceived organisational justice.

Path specific hypothesis 8: Organisational justice positively affect affective commitment.

Path specific hypothesis 9: *Feelings of retaliation positively affect counter-productive work behaviour.*

Path specific hypothesis 10: *Negative affect positively affect perceptions of psychological contract breach.*

Path specific hypothesis 11: Perceptions of psychological contract breach positively affect feelings of retaliation or revenge.

Path specific hypothesis 12: Conscientiousness negatively affect counter-productive work behaviours.

3.4 Statistical hypotheses

The LISREL notational system (Jöreskog & Sorbom, 1983) was used to formulate the statistical hypotheses for the study. The claim by the substantive hypothesis is that it provides a *perfect* account of the psychological mechanisms underlying the occurrence of counter-productive work behaviour(s) among academics could be translated into exact fit null hypothesis for the measurement and structural models, as indicated in Table 3.1.

Table 3.1

Measurement and Structural Exact Fit Null Hypotheses

Measurement	Structural
H_{01a}: RMSEA = 0	H_{01b}: RMSEA = 0
H_{a1a}: RMSEA > 0	H_{a1b}: RMSEA > 0

Achieving exact perfect representation of reality as suggested by the structural models is rarely possible. Only a close approximation is possible. This means the substantive hypothesis provides a *close* or approximate account of the psychological mechanisms underlying the occurrence of counter-productive work behaviour(s) among academics, and it could be translated into close fit null hypotheses for measurement and structural models, as shown in Table 3.2.

Table 3.2

Substantive Measurement and Structural Close Fit Null Hypotheses

Measurement	Structural
H_{02b}: RMSEA = 0	H_{02b}: RMSEA = 0
H_{a2b}: RMSEA > 0	H_{a2b}: RMSEA > 0

As alluded to previously, the substantive hypothesis was dissected into ten specific path coefficient hypotheses which were tested in the structural model.

Table 3.3

Path Coefficient Statistical Hypotheses

Hypothesis 3 H_{03}: $\beta_{12} = 0$ H_{a3}: $\beta_{12} > 0$	Hypothesis 7 H_{07}: $\beta_{46} = 0$ H_{a7}: $\beta_{46} < 0$	Hypothesis 10 H_{010}: $\beta_{62} = 0$ H_{a10}: $\beta_{62} > 0$
Hypothesis 4 H_{04}: $\beta_{15} = 0$ H_{a4}: $\beta_{15} < 0$	Hypothesis 8 H_{08}: $\beta_{54} = 0$ H_{a8}: $\beta_{54} > 0$	Hypothesis 11 H_{011}: $\beta_{76} = 0$ H_{a11}: $\beta_{76} > 0$
Hypothesis 5 H_{05}: $\beta_{23} = 0$ H_{a5}: $\beta_{23} > 0$	Hypothesis 9 H_{09}: $\beta_{17} = 0$ H_{a9}: $\beta_{17} > 0$	Hypothesis 12 H_{012}: $\gamma_{11} = 0$ H_{a12}: $\gamma_{11} < 0$
Hypothesis 6 H_{06}: $\beta_{36} = 0$ H_{a6}: $\beta_{36} > 0$		

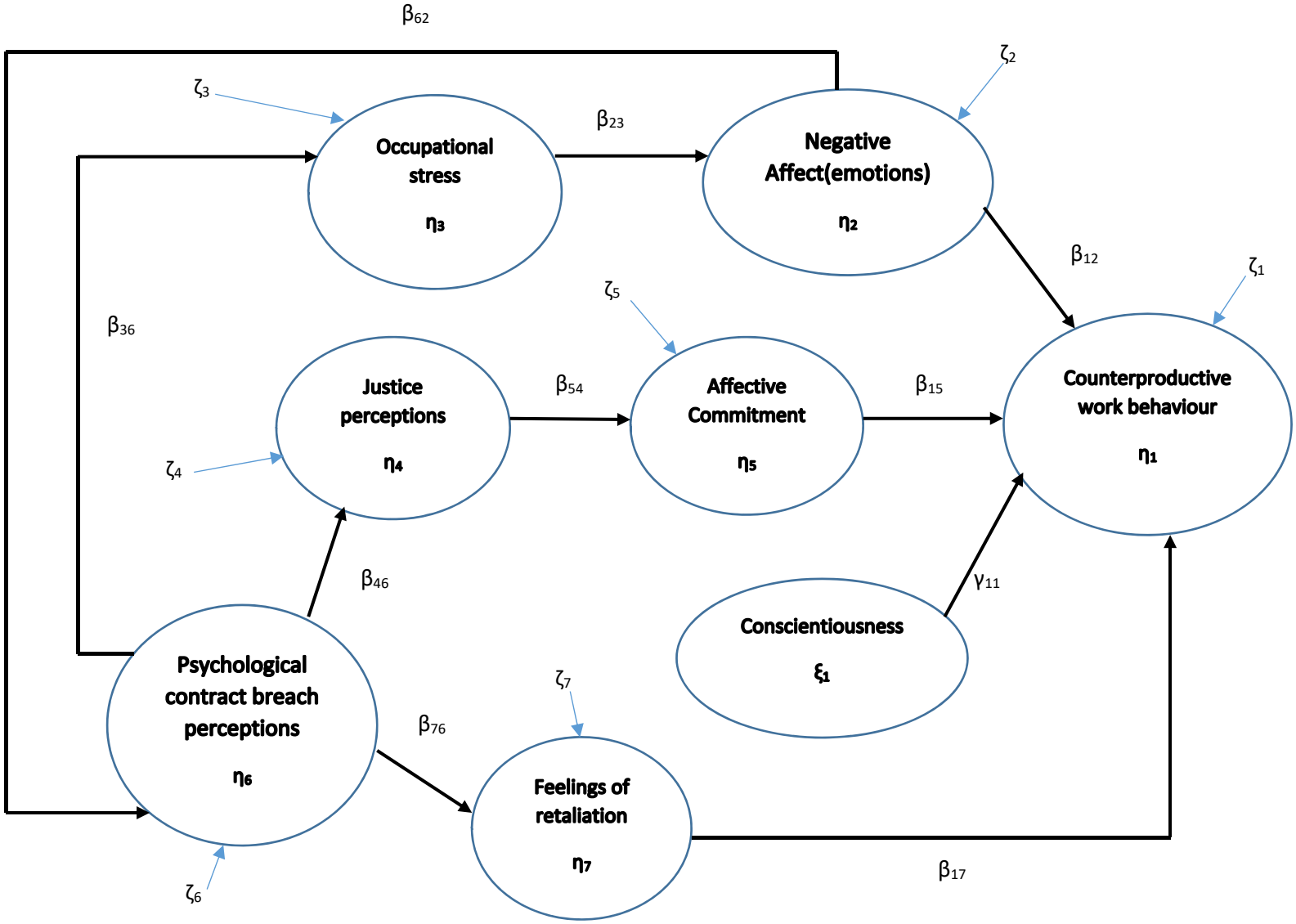


Figure 3.1 The Counter-productive Work Behaviour Structural Model

3.5 Research Design

A research design is a strategic plan or framework that guides how a researcher tests hypothesis through observation and an analysis (Kalof et al., 2008). A good design should enable the researcher to arrive at a valid verdict concerning the validity of the hypothesised relationship among the latent variables. To achieve this, the research design should provide the researcher the opportunity to maximise variance in the dependent variable (du Plooy-Cilliers et al., 2016), minimise measurement error variances, while controlling for extraneous variance (Kerlinger & Lee, 2000). With the above background, the choice of which design to use, therefore resides with the researcher, guided by the main research question.

One consideration that helps a researcher to decide on the choice of design is the purposes of the research - that is, whether the researcher intends to explore, describe or explain. When the research purpose is to explore or describe, it means the research answers questions about what is happening now (current situation). On the other hand, if the purpose of the research is to explain, then it wants to gain some understanding of why a situation occurs (Denscombe, 2007). To be specific, an exploratory research satisfies the curiosity of a researcher to understand a phenomenon for further research, while a descriptive research gives an accurate description, of an event, a person or persons, a situation or phenomenon with the aim of defining. When a descriptive research extends to find out why observed patterns exists, it becomes explanatory. According to Kumar (2011) explanatory research attempts to clarify *why* and *how*, with the aim of showing some relationship between variables.

Since the problem and purpose for this study lend themselves to explaining why academic employees engage in counter-productive work behaviour, it was explanatory in nature, designed to identify and establish causality or the relationship among all the eight latent variables in the model.

3.6 Design choice and rationale

Explanation of causal influences or relationships between variables within the counter-productive work behaviour structural model, can be done within the experimental or non-experimental designs since both involve establishing relationships among

variables. The type of question sought to be addressed by this study, however, did not lend itself to the experimental design since many of the exogenous variable(s) (that is, conscientiousness) in the structural model could not be subjected to manipulation by the researcher. The non-experimental research design was, therefore, preferred for this study. More specifically, the *ex post facto* correlational design was used. A correlational design examines how the variables are related, compared to examining the extent to which one variable causes direct change in another. An *ex post facto* research design seeks to reveal possible relationships by observing an existing condition and searching back in time for possible contributing factors (Kerlinger & Rint, 1986). A scientist using this method does not have a direct control of the independent variables because their manifestations have already occurred, or because they are inherently no manipulatable. The researcher only makes inferences about relations among variables without any direct intervention, from associated variations in the independent and dependent variable (Kerlinger & Lee, 2000).

The *ex post facto* correlational design can be criticised for inability to establish causality and direction, internal validity threats (for example, history, maturation and selection), lack of control, and that interpretations might be wrongly done. Authors, such as Terre Blanche *et al.* (2016) and Brynard *et al.* (2016), however, still advocate for its use as compared to the experimental designs because of the opportunity for the researcher to minimise error variance and control extraneous variables by selecting diverse samples and to use reliable indicator variables.

The proposed structural model had seven endogenous variables (psychological contract breach perceptions (PCB), feelings of retaliation (R), perceived organisational justice (POJ), affective commitment (AC), counter-productive work behaviour (CWB), occupational stress (OCS), negative emotions/affect (NA), and one exogenous variable, conscientiousness (COSC). There are some relations indicated among the exogenous latent variable(s) and endogenous variables and, therefore, it means examining cause and effect of different variables that influence engaging in counter-productive work behaviour, at a single point in time, without manipulating independent variables, after or before the fact.

3.7 Population

When research cannot be conducted on the entire population of interest, a sampling is required. The sample should be from the population that has been identified to test the theory under investigation, otherwise the results will be irrelevant. According to Brynard et al. (2016), sampling simplifies research, saves time and helps to cut costs. In the present study, the understanding of the antecedents of counter-productive work behaviour required delineating the population, sample, sampling procedures and the sample size.

The sampling population of the study comprised of all academic staff members employed at three selected universities in South Africa. The target population were only those who were full-time/permanent, both junior and senior academics. The three universities were selected based on, accessibility, cost constraints and their proximity to the researcher. The targeted academics at the selected institutions differed in their cultural backgrounds and demographic characteristics. The interest in academic institutions was necessitated by the *prima facie* evidence on the prevalence of counter-productive work behaviour among academics in institutions of higher learning, as well as paucity of evidence of a structural model on counter-productive work behaviour tested in academic institutions in the country.

3.8 Sampling

As alluded above, a sample is selected from the entire population (du Plooy-Cilliers et al., 2016). The choice of sampling technique is guided by the purpose of the research question, among other issues. Two sampling procedures employed in research are probability and non-probability. Probability sampling involves techniques for random sampling where every member of the population has a fixed and equal chance of being selected to be part of the sample (Uprichard, 2011). Non-probability sampling is used when it is nearly impossible to determine who the entire population is or when it is difficult gain access to the entire population (du Plooy-Cilliers et al., 2016). In the present study, because the population of academics is not known, non-probability sampling, specifically, convenient sampling was considered for use. This means participants were selected based on their availability and time (Babbie, 2007). The choice of the convenience sampling was based on accessibility, cost constraints and proximity of the researcher.

3.9 Sample size

Once the sampling procedure was selected, the next was to determine the *sample size.* According to Kumar (2011) sample size determination is a function of the type of study, the type of analysis to be performed on the collected data, accessibility and size of the population, level of confidence interval proposed for the data to be collected, and the margin of error to be tolerated by the researcher. The rules of thumb of structural equation modelling (SEM) for determining sample size, include points, such as minimum sample size of 100 to 200 (Boomsma, 1985) or 5 to 10 observations per estimated parameter (Bentler & Chou, 1987). Factors to consider for sample size determination in SEM, however, are number of factors (how complex the model is), degree of missing data, multivariate normality of data, number of indicators, their loadings and error variances, as well methods of estimation.

Estimation models, such as maximum likelihood can be used with a sample size as small as 50, while taking care of missing data and sampling error allows the use of larger samples of between 200 and 400. SEM requires large samples because the parameter estimates and chi-square test of fit are sensitive to sample size (Wolf, *et al,* 2013). Large samples are required because they enable the research design to achieve enough statistical power to test the research hypothesis (MacCallum et al., 1999).

Based on this information, Preacher and Coffman (2006) software, which requires a statistical power of .80 for the close fit hypothesis, as well as using the ratio of the number of the cases (N) to the number of parameters that need statistical estimates (Jackson, 2003) was used to calculate the ideal sample size for the study as 211. The responses obtained were 211, but only 188 were used for the final analysis. This represented an 89% response rate.

3.10 Research participants

The participants invited to take part in the research were full-time academics employed at the three selected universities in South Africa. Details of the sample characteristics are provided in Chapter 4.

3.11 Data Collection Procedure

Ethical clearance to conduct the research was initially sought and obtained from the departmental ethics committee and the Stellenbosch Research Ethics Committee. Permission was further sought from the research ethics committees of the two other higher education institutions which participated in the study. Once approval was obtained, contact was made with identified representatives of the participating three higher education institutions through their IT departments, which helped in launching the online survey for data collection purposes.

The online survey encouraged all academic staff members at the three higher education institutions to participate in the survey by introducing the researcher, explaining the purpose of the study, highlighting consent issues, voluntary participation, the targeted group, risks in participating in the study, mitigating methods during data collection, and issues of confidentiality and anonymity. Permission to conduct the study was not obtained at the same time from all the three institutions, hence, the launching of the online survey took place at different times and days at each institution. Data collection period was approximately three months in total at all the three participating higher education institutions.

3.12 Evaluation of Research Ethics

In South Africa, any research conducted should be done within the framework of appropriate legislative provisions (National Health Act (Act 61 of 2003) and applicable institutional guidelines, in this case, Stellenbosch University. Adherence to gazetted guidelines and institutional procedures allows a reflection by the researcher on potential risks associated with his or her research to protect the safety, dignity and rights of those participating. As such, the Health Professions Act (Act 56 of 1974) mandates psychological researches to be done after obtaining permission from organisations where research participants will be solicited. For the present study, therefore, permission to conduct the research was obtained from all the three participating higher education institutions, and adherence to issues of voluntary informed consent, voluntary participation, objectives of the research, how results were to be disseminated, rights of participants, and others were emphasised in the consent form which was presented as preamble to the online survey.

3.13 Statistical Analysis

Various statistical analysing techniques were used to answer the questions posed by the researcher. Answers required missing values analysis, and item analysis for the purpose of eliminating poor items in the different scales used for data collection. Using SPSS Version 24, dimensionality analysis was performed (using exploratory factor analysis) (EFA), to assess the unidimensionality of scales and sub-scales of the different instruments used in the study. Confirmatory factor analysis was done using LISREL Version 8.8 to evaluate the fit of both the measurement and the structural models.

3.13.1 Missing values

The first most important step in analysing data in SEM is to deal with missing data or values. Several researchers have evaluated the effects of missing data on statistical power in SEM (Davey & Salva, 2009a; Dolan et al., 2005). Checking for missing data requires the researcher to understand the reasons behind the missing data, their pattern, and quantity, as any of these reasons can compromise the results. Missing data in research can be classified as, *missing at random* (Saint-Maurice et al., 2017); *missing completely at random* (Silva-Ramirez et al., 2010), or *missing not at random* (Mustillo & Kwon, 2015). These classifications require the researcher to understand the reasons for the missing data. *Missing at random* and *missing completely at random* do not pose much threat to the results, but the *missing not at random* should be a concern to the researcher (Little & Rubin, 2002).

Several methods of dealing with missing data are available, depending on the sample size. Researchers have highlighted that deletion methods, such as, pairwise or listwise can be used (Penney & Atkinson, 2011; Sullivan et al., 2015). When using the *deletion methods*, for example, the listwise, each case is checked for available data on each variable, excluding all those cases without full data. While the method sounds simplistic and very manageable, one of its disadvantages is the possibility of removing many cases (*sample size reduction)*, rendering the study not worthwhile in terms of statistical power. With pairwise deletion, sometimes called ‘available case analysis’, the process deletes only those cases relating to each pair of variables with missing data, allowing for inclusion of as many cases as possible (Penney & Atkinson, 2011).

The only challenge are implications encountered when the sample is different each time an analysis must be performed.

Single imputation methods, such as the mean or mode involve use of average-observed values to replace the missing values (Penney & Atkinson, 2011). This method distorts the correlations and variance of the variable itself as well as the correlations of the variable with another variable. Among the more rigorous ways of dealing with missing data is the imputation by matching technique, and this was chosen for this study because the of the amount of missing values and the fact assumption of data of multivariate normality was not met. This process involves replacing missing values with actual values. The required values come from using other cases with similar response patterns over a set of matching values (Rubin, 1987; Royston, 2005) (detailed process explained in Section 3.11.2).

3.13.2 Item analysis

The purpose of a measuring instrument is to provide information on the standing of a respondent on a variable of interest. Items in a questionnaire are, therefore, stimuli to which the respondent responds with a behaviour expressive of a specific underlying latent variable. For this to happen, the scale items must be carefully examined to ensure that they represent the latent variable as constitutively defined. At a basic level, this can be examined by evaluating whether the items in a scale reflect a common underlying variable, which is indicated when items in the scale correlate with each other (Theron, 2016). Items that do not reflect the same latent variable are considered 'poor items' and should potentially be eliminated. Once poor items are removed, the reliability and validity of the scale can be improved. For the purpose of this study, in order to determine if items in the different scales or subscales of the different latent variables in the proposed model, clearly described underlying latent variables, item analysis was performed using SPSS Version 24. Key statistics focused on to make decisions on the quality of items were – the Alpha value, item-total correlations, the squared multiple correlation, checking the subscale or scale reliability and variance (Cronbach Alpha) when an item or items is/are deleted, inter-item correlation and the mean inter-item correlate.

3.13.3 Dimensionality analysis

In any study, factor analysis is performed on each scale or subscale to assess the unidimensionality of the measuring scales. Assessing unidimensionality means checking whether the scales or subscales tap on only the latent variable or construct of interest. In other words - *Do the items in each subscale 'hang together' to reflect a single underlying latent variable so that they all measure this single underlying variable?* According to Flora and Flake (2017) exploratory factor analysis (EFA) is often used to determine the number of factors and the loading of each item on the factors. This analysis shows the researcher, whether each item in a subscale or scale load highly on a single factor. The acceptable factor loading value used was .5 and above, as recommended by Gorsuch(1997).

According to Pallant (2013), doing factor extraction means determining the least number of factors that can best represent the relationships among a set of variables. Principle axis factoring (PAF) was the preferred method for this study, compared to other methods, such as principle component analysis (PCA), because, PAF analyses common variance shared between items of a scale or subscale, while the PCA analyses all variances (Fabrigar et al., (1999). On the decision of rotation method, the oblique method was preferred over the orthogonal method because it allows the factors to correlate, while the orthogonal rotation results in loss of valuable information if the factors are correlated (Majors & Sedlacek, 2001). As in many other studies that used the exploratory factor analysis, for example, Velicer and Jackson (1990), the scree test, which involves examining the graph of eigenvalues and spotting the 'break' point in the data where the curve flattens, was used in this study to determine the factors to retain.

3.13.4 Confirmatory factor analysis

The measurement model focuses on operationalising the latent variables (using item parcels or individual items as indicators), through confirmatory factor analysis. According to Burger (2012) operationalisation of the measurement model is achieved when it reproduces the observed covariance matrix, and when the model parameter estimates indicate that most of the variance in the indicator variables can be explained in terms of the latent variables to which they were meant to reflect. Hurley, *et al.* (1997) reiterate that confirmatory factor analysis relates to measurement models – the

relationship between the indicator (observed) measures and latent variables. Thus, when the indicator variables usefully reflect the latent variables or factors they were assigned to represent, one can confidently interpret the comprehensive LISREL model fit indices without any challenges (in most cases). This means that fitting the measurement model should be done and evaluated before fitting the comprehensive LISREL structural model. As such, in this study, using LIREL 8.8 to perform confirmatory factor analysis, the reproduced covariance matrix was analysed to determine the measurement model fit.

3.13.5 Structural equation modelling (SEM)

Structural equation modelling (SEM) is a statistical technique used in the behavioural sciences (Bentler, 1995). Its interest lies in the analysis of the relationships between theoretical constructs, which are often represented by latent variables. The technique can be used to examine relationships between one or more independent variables and several dependent variables (Tabachnick & Fidell, 2007), well beyond the commonly used regression modelling. In other words, it integrates multiple independent and dependent variables as well as hypothetical constructs that are represented by groups of observed variables. By so doing, it accounts for measurement error, and simultaneous testing of all relationships in a model (Hooper et al., 2008). SEM uses multivariate normality to determine if the indicator variables measuring the latent variables follow a multivariate normal distribution. For the present study, however, an assumption was made that all the data were not normal, hence, the appropriate estimation technique chosen was the Robust Maximum Likelihood estimation.

3.13.5.1 Variable type

An important issue in SEM is the identification of variable type, which is done by either creating item parcels or taking individual items as indicators. The difference between the two is that, individual items increases the sample size of the total number of parameters to be estimated, while the use of item parcels do not (Matsunaga, 2008). In addition to the above, another decision in relation to variable type is the consideration to treat variables as measured on continuous scales, as was the case in the present study, even though all the scales were ordinal. The specification enables the performance of confirmatory factor analysis (CFA). In line with Rhemtulla(2012),

insignificant harm to chi-square estimates, standard error and parameters, can be experienced when ordinal scales are converted to continuous scales.

3.13.5.2 Fitting the comprehensive structural model

The measurement model, that is, the hypothesised relationships between the latent factors and their corresponding item parcel indicators, together with the structural model, that is, the hypothesised structural model between the latent factors, constitute the comprehensive LIREL model. This comprehensive model was also fitted by analysing the covariance matrix, using the Robust Maximum Likelihood estimation technique (RML) (Mels, 2003). LISREL 8.8 was used to perform the structural equation analysis (Diamantopoulos & Siguaw, 2000).

3.14 Measuring Instruments

To determine whether the proposed counter-productive work behaviour structural model provides an accurate description of the psychological processes causing variations in CWB among academics, measures of latent variables had to be obtained. Charalampi et al. (2018) caution that questionable poor measures of variables are likely to compromise the assessment of the hypothesised relationships in a model. To avoid this, standardised instruments measuring each variable had to be used. The first step in assessing the quality of the instruments used was to do a literature review to check previously obtained psychometric properties and subsequently judging their applicability to the present study. The psychometric properties of the instruments used to operationalise the latent variables in the structural model are discussed in terms of reliability, validity and response format, with each measure evaluated using item analysis and dimensionality analysis (EFA). Item analysis enabled the identification of poor items and their removal, where necessary. In cases where some CFA measures indicated unacceptable fit, a re-examination or re-assignment of the scale or subscale item parcel indicators had to be done, with reliability and EFA repeated to check the new psychometric properties.

3.14.1 Data Preparation

Data was exported from SunSurvey to Excel. Checks were done on the data set for any missing values and dealt with through the selected imputation method as discussed below.

3.14.2 Dealing with missing values

As previously indicated, missing values can be a result of missing at random, completely at random or not at random. The missing values had to be dealt with first before doing any further analysis. A rule was established, first, that all the cases with more than 50% or more blanks of the total item responses should be deleted. Using this rule, seven cases were deleted. Secondly, all those who completed the questionnaire but were not non-academics were deleted; the total was 16. The total deleted cases were 23; out of 211 cases, thus, 188 remained. The distribution of missing values after this exercise is shown below.

Table 3.4

Distribution of Missing Values

Instrument	Number of missing values
Counterproductive Work Behaviour (CWB)	10
Negative Affect (NEGAFF)	3
Occupational Stress (OCCSTR)	16
Organisational Justice Perceptions (ORGJP)	17
Affective Commitment (AFFCOM)	6
Psychological Contract Breach (PCB)	5
Revenge (REVENG)	5
Conscientiousness (CONSC)	7

After recording reverse scored items, the missing values were analysed and imputed using the imputation by matching method. The imputation method was chosen because it does not significantly reduce the sample size in SEM (Diamantopoulos &

Siguaw, 2000). This it is the most safe and conservative procedure for treating missing values (Theron, 2016). In addition, the precondition of data normality was rejected right from the onset, and the 30% rule of missing values was also met since the

calculated one for the data was 0.053%. This method involved substituting real values for missing values. These substituted values were derived from the one or more other cases that had a similar response pattern over a set of matching variables. The cases devoid of missing values were typically used as matching variables (Jorekog & Sorbom, 1996). The imputation method managed to deal with all the cases that has missing values and the final imputed data still had 188 cases.

3.14.3 Counter-productive work behaviour (CWB) scale

Counter-productive work behaviour was measured using a self-report deviance measure. The measure has 10 items, interpersonal (5 items), self-destructive (3 items) and organisational counter-productive work behaviours (2 items). Responses were measured on a five-point Likert Scale ranging from 1 (*'never'*) to 5 *('very often'*). All items were negatively worded, and the reported alpha is .72 (Sackett, 2002).

3.14.3.1 Item analysis

Item analyses were conducted on the initial subscales and the results were found to be inadmissible. A decision was made to re-configure the subscales to reflect only counterproductive work behaviour directed at the organisation (CWBO) and individual co-workers (CWBI) as stated in literature (Kelloway et al., 2002). CWBO now had five items and CWBI also five items. The results of the new CWB scale and its subscales' item analyses are shown in Table 3.5 and Table 3.6, respectively.

Table 3.5

Descriptive Statistics for CWB Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
CWB	7	.283	11.14	3.13	.735

Table 3.6

Descriptive Statistics for CWB Subscales

CWB Subscales	No. of items retained	Inter-item correlation mean	Total item mean	SD	α
CWBO	4	.305	5.60	1.79	.631
CWBI	3	.368	5.54	1.82	.639

Note: CWBI = Counterproductive work behaviour against individual employees (work colleagues); CWBO = Counterproductive work behaviour against the organisation

The results of item analysis showed moderate and acceptable internal consistency values of .63 for the CWBO subscale, above the cut-off point of .70 (Nunnally, 1978). The corrected item-total correlation indicators for the CWBO showed that they were all correlated above .30 (Pallant, 2010). The mean inter-item correlation is .30, with values ranging from .28 to .38, suggesting moderate relationship. Item CWB1 was, however, deleted as it indicated low correlations with all other items and resulted in an increase in Cronbach alpha. This resulted in four items retained for further analysis.

The CWBI had an internal consistency value of .64 (rounded off). All the corrected item-total correlations were larger than .30 which is acceptable (Pallant, 2010). The mean inter-item correlation is .37, with values ranging from .25 to .53, suggesting a moderate to strong relationship. Items CWB8 and CWB9 were deleted because of low correlations with other variables and resultant increase in Cronbach alpha. This resulted in three items retained for further analysis.

3.14.3.2 Exploratory factor analysis

The CWBO subscale obtained a Kaiser-Meyer-Olkin measure of sampling adequacy value of .712 and the Bartlett's Test of Sphericity test statistic obtained a value of 83.945 (df = 6; p = 0.00) which allowed for the identity matrix null hypothesis to be rejected, indicating factor analysability of the correlation matrix (Field, 2005).

Only one factor with an eigenvalue greater than one (1) was obtained and the scree plot also showed extraction of a single factor, which accounted for 30.75% of the total variance. The factor matrix indicated that all the items were loaded on one factor satisfactorily as all factor loadings were larger than .50 (Comrey & Lee's, 1992). The resultant factor structure is shown in Table 3.7. 0(0%) of the residual correlations were larger than .05, suggesting that the factor solution provides a credible explanation for

the observed inter-item correlation matrix. The unidimensionality assumption was thus corroborated.

Table 3.7

Factor Matrix for CWBO Subscale

Item	Factor (1)
CwB4	.600
CwB5	.588
CwB7	.514
CwB10	.510

The CWBI subscale obtained a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value of .594 and the Bartlett's Test of Sphericity obtained a value of 84.226 (df = 3; p = 0.00) which allowed for the identity matrix null hypothesis to be rejected, indicating factor analysability of the correlation matrix.

Only one factor with an eigenvalue greater than one (1) was obtained and the scree plot also showed extraction of a single factor. The factor accounted for 41.71% of the total variance. The factor matrix indicated that two items were loaded on one factor satisfactorily as all factor loadings were larger than .50, except for item CwB2 which had loading less than .50. The resultant factor structure, as shown in Table 3.8 was deemed acceptable. 0(0%) of the residual correlations were larger than .05, suggesting that the factor solution provides a credible explanation for the observed inter-item correlation matrix. The unidimensionality assumption was thus corroborated.

Table 3.8

Factor Matrix for the CWBI Subscale

Item	Factor (1)
CwB2	.388
CwB3	.827
CwB6	.645

3.14.3.3 Confirmatory factor analysis

Based on the EFA, confirmatory factor analysis (CFA) was performed on the counter-productive work behaviour scale. The counter-productive work behaviour

measurement model consisted of 7 observed variables regressed on two latent variables. The results of the CFA are presented in Table 3.9.

Table 3.9

Goodness of fit statistics for the CWB measurement model

X^2	S-BX^2	df	S-BX^2/df	NNFI	CFI	RMR	SRMR	RMSEA	P value (close)
20.268	15.161	13	1.16	.98	.99	.02	.04	0.029	.681

Note: X2 = Chi-square; S-BX2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

The results in Table 3.9 indicate that a close fit model was obtained (p>.05). In addition, the RMSEA value of .029 indicates good fit. Based on these goodness of fit statistics, a good model fit could be concluded.

Inspection of the results revealed that all factor loadings were statistically significant (z ≥1.64). The completely standardized Lambda-X solution revealed that all factor loadings exceeded the .4 cut-off value. Loadings ranged from .42 (item CwB2) to .82 (item CwB3). Based on the overall results, it could be concluded that the model achieved a good fit.

3.14.2 Negative Affect (NEGAFF) scale

The items from Emmons Mood Indicator (Dinner & Emmons, 1984) and Watson, Clark and Tellegan (1988) which measure negative affect using six items/words (*worried, anxious, depressed, frustrated, angry/hostile*, and *unhappy*) were used to measure negative affect. Respondents indicated the extent to which they are experiencing each emotion *'today'* on a 5-point rating scale ranging from 1 (*not at all*) to 5 (*extremely*). Vantilborgh et al. (2016) found an internal consistency measure for this scale ranging between .80 and .91.

3.14.2.1 Item analysis

The initial item analysis of the Negative Affect scale indicated satisfactory item statistics and exploratory factor analysis results. During the comprehensive measurement model fit, however, some parameter statistics for the scale were not admissible and items NegEm1 and NegEm2 were deleted since they seem to be influenced by impression management rather than indicating negative mood. This

means the final scale had four items (NegEm3, NegEm4, NegEm5, NegEm6). The results of the item analysis on the scale are shown in Table 3.10.

Table 3.10

Descriptive Statistics for NEGAFF Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
NEGAFF	4	.597	10.23	4.35	.855

The results of item analysis showed very good internal consistency value of .855 for the NEGAFF scale, above the cut-off point of .7 (Nunnally, 1978). The corrected item-total correlation indicated for the CWBO showed that they were all correlated above .30 (Pallant, 2010). The mean inter-item correlation is .60, with values ranging from .53 to .71, suggesting a strong relationship. None of the items indicated that if deleted the Cronbach alpha would significantly increase, resulting in four items retained for further analysis.

3.14.2.2 Exploratory factor analysis

The NEGAFF scale obtained a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value of .792 and the Bartlett's Test of Sphericity obtained a value of 334.987 (df = 6; p = 0.00) indicating factor analysability of the correlation matrix (Field, 2005). Only one factor with an eigenvalue greater than one (1) was obtained. The scree plot also showed extraction of a single factor, which explained 60.02 % of the total variance. The factor matrix indicated that all the items loaded on one factor satisfactorily as all factor loadings were larger than .50 (Comrey & Lees, 1992). The resultant factor structure is shown in Table 3.11. 2(33%) of the residual correlations were larger than .05, suggesting that the factor solution provides a credible explanation for the observed inter-item correlation matrix. The unidimensionality assumption was thus supported.

Table 3.11

Factor Matrix for the NEGAFF Scale

Item	Factor (1)
NegEm3	.784
NegEm4	.701
NegEm5	.770
NegEm6	.837

3.14.3 Occupational stress (OCCSTR) scale

In order to measure occupational stress, the Job Stress Measure by Sakketou et al. (2014) was used. The scale measures job or work-related stress using 16 items on a 5-point Likert Scale, depending on the extent of the work-related stress produced by each item. On the scale, '1' indicates - *The item produces no stress at all* and 5 – *It produces a great deal of stress*. The alpha reported by the authors was on an average of .87 for all the three subscales, that is, characteristics of the work (10 items), characteristic of job (2 items) and clarity of objectives (4 items).

3.14.3.1 Item analysis

The item analysis conducted for the original subscales resulted in poor item statistics. and the following changes were done: Item Ostress6 in the Job Characteristics subscale was deleted because of low correlations with other variables. Items Ostress9 and 10 were also removed from original Job Characteristics subscale to form a new factor/dimension, because they all loaded on factor 2 after factor analysis. A new dimension, Career Development subscale was created because of factor fission (items Ostress9 and Ostress10) removed from original job characteristic subscale to form this new dimension. In the Unclear Objectives subscale, item Ostress13 was deleted because of low correlations with other variables. Item analysis after these changes showed goo item statistics for all subscales, however, during the fitting of comprehensive measurement model, there were inadmissible parameter values for the subscales and further fission was done as follows:

The Career development subscale was totally removed because one of the items had inadmissible values. In addition, the items seem to be more about a person's perception of the fairness about how the organisation makes decisions about careers – linked more to organisational justice. The dimension of Job Characteristics was split

into two dimensions, that is, Job Demands (Ostress4 and Ostress5) after deleting Ostress1 which seemed too ambiguous as it referred to assignments; Ostress2 and Ostress3 which seemed irrelevant to academics. This new dimension is purely about work pressure (specifically time pressure and volume of work); and Responsibility (Ostress7 and Ostress8) - this is specifically about the level of responsibility a person must carry. Lastly, for the Unclear Objectives subscale, item Ostress16 was deleted as it related more to organisational justice. After making these changes, item analysis was conducted on the newly created OCCSTR scale and its subscales as indicated in Tables 3.12 and 3.13.

Table 3.12

Descriptive Statistics for OCCSTR Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
OCCSTR	6	.530	19.71	5.58	.867

Note: OCCSTR = Occupational Stress

Table 3.13

Descriptive Statistics for the OCCSTR Subscales

OCCSTR subscales	No. of items	Inter-item correlation mean	Total item mean	SD	α
Job Demands	2	.877	6.95	2.30	.934
Responsibility	2	.837	6.41	2.16	.911
Unclear Objectives	2	.467	6.34	2.19	.636

The reliability coefficient value for the Job Demands subscale was .934, and considered to be excellent (Taber, 2017). The corrected item-total correlation showed that they were all correlated above .30 (Pallant, 2010). The mean inter-item correlation was .88. None of the items indicated that if deleted the Cronbach alpha would significantly increase, resulting in the two items retained for further analysis.

The responsibility subscale's internal consistency was .911, also regarded as excellent and above .70(Nunnally, 1978). The corrected item-total correlation showed that they were all correlated above .30 (Pallant, 2010). The mean inter-item correlation was .84.

None of the items indicated that if deleted the Cronbach alpha would significantly increase, therefore, the two items were retained for further analysis.

The reliability coefficient of the Unclear Objectives subscale was .64, and regarded as acceptable (Taber, 2017). The corrected item-total correlation showed that they were all correlated above .30 (Pallant, 2010). The mean inter-item correlation was .47. None of the items indicated that if deleted the Cronbach alpha would significantly increase, resulting in two items being retained for further analysis.

3.14.3.2 Exploratory factor analysis

Factor analysis of the OCCSTR measure commenced with EFA prior to CFA, since it is necessary to first determine the underlying factor structure of the newly developed dimensions. An EFA analysis was subsequently performed for each of the dimensions. The EFA was conducted utilising principal axis factoring (PAF) with direct oblimin rotation.

The results indicated a KMO-value of .50, and a Bartlett's Test of Sphericity test statistic obtained a value of 272.336 (df = 1; p = 0.00) serving as evidence for the factor analysability of the Job Demands subscale.

The Eigenvalue-greater-than-one rule together with the Scree Plot pointed to the extraction of one factor accounting for 83.63% of the total variance. The factor matrix indicated that all the items loaded on one factor satisfactorily as all factor loadings were larger than .50 (Comrey & Lee's, 1992). Investigating the non-redundant residuals with absolute values greater than .05 revealed an acceptable value of 0% for the solution. This indicated the one-factor solution provided an admissible account of the factor structure of the Job Demands subscale measure within the current sample. The structure matrix of the Job Demands subscale is indicated in Table 3.14.

Table 3.14

Factor Matrix for the Job Demands Subscale

Item	Factor (1)
Ostress4	.936
Ostress5	.936

With regards to the Responsibility subscale, the results indicate a KMO value of .50 and a Bartlett's Test of Sphericity obtained a value of 223.513 (df = 1; p = 0.00) serving as evidence for the factor analysability of the subscale. An Eigen value of greater than

one and the scree plot both indicated the extraction of a single factor, which accounted for 83.63% of the total variance. 0(.0%) of the residual correlations were larger than .05, suggesting that the factor solution provides a credible explanation for the observed inter-item correlation matrix. All factor loadings of the factor matrix were above .50. The unidimensionality assumption of the subscale was thus supported. The structure matrix ix is presented in Table 3.15.

Table 3.15

Factor Matrix for the Responsibility Subscale

Item	Factor (1)
Ostress7	.914
Ostress8	.914

The KMO value for the Unclear Objectives subscale was .50. The Bartlett's Test of Sphericity test obtained a value of 45.527 (df =1; p = 0.00). These two served as evidence of the factor analysability of the subscale. The Eigen value is greater than 1, together with the scree plot indicate that a single factor was extracted. This factor accounted for 46.55% of the total variance. The factor matrix loadings indicated that all items were loaded above the cut-off point of .50 (Comrey & Lee's, 1992). In terms of the residual correlations, 0(.0%) were larger than .05, suggesting that the factor solution provides a credible explanation for the observed inter-item correlation matrix. The factor matrix solution is depicted in Table 3.16.

Table 3.16

Factor Matrix for the Unclear Objectives Subscale

Item	Factor (1)
Ostress14	.682
Ostress15	.682

3.14.3.3 Confirmatory factor analysis

Based on the EFA, CFA was conducted on the OCCSTR scale. The OCCSTR scale consisted on six observed variables and two latent variables. The OCCSTR measurement model had 6 observed variables - regressed three latent variables. The results of the CFA are shown in Table 3.17.

Table 3.17

Goodness of Fit Statistics for the OCCSTR Measurement Model

X^2	S-BX^2	df	S-BX^2/df	NNFI	CFI	RMR	SRMR	RMSEA	P value (close)
4.479	4.533	6	0.747	1.00	1.00	.012	.01	0.00	.813

Note: X2 = Chi-square; S-BX2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

Table 3.17 indicates that a close fit model was obtained (p>.05). In addition, the RMSEA value of .00 indicate good fit. Based on these goodness of fit statistics, good model fit could be concluded.

An inspection of the results showed that all factor loadings were statistically significant (z ≥ 1.64). The completely standardized Lambda-X solution revealed that all factor loadings exceeded the .4 cut-off value; loadings ranged from .60 (item Ostress15) to .93 (item Ostress5). Based on the overall results, it was concluded that the model achieved good fit.

3.14.4 Organisational Justice (ORGJP) scale

Perceptions of justice in this study was measured using the sub-scales of distributive justice with 4 items, and procedural with 7 items, originally developed by Colquitt (2001). The two, procedural and distribute justice, have been widely used in previous studies on justice perceptions in relation to commitment, as in this present study, and reported on in some studies with academics (Balassiano & Salles, 2012). The items on the scales are measured on a 5 – point scale from *1- strongly disagree, to 5 – strongly agree*. Beauregard (2014) found reliability coefficients of the sub-scales as follows: distributive = .89, and procedural = .91.

3.14.4.1 Item analysis

Initial item analysis on the two subscales of organisational justice, that is, procedural and distributive, revealed good item statistics. When the comprehensive measurement model was fitted, however, there were inadmissible values for the procedural justice subscale. A theoretically sensible decision was made to split the subscale into two dimensions, without deleting any item. The new dimensions are: Consult (JustP1, JustP2, JustP6)- specifically referring to the extent to which employees feel that they are consulted or have influence over procedures. The second dimension is called

Procedural Fairness (JustP3, JustP4, JustP5, JustP7) – referring to the extent to which employees experience the procedures as fair, consistent or ethical. The new organisational justice scale now had three subscales - Consult, Procedural Fairness and Distributive. Item analysis was subsequently conducted on the new ORGJP scale and the three subscales and the results are presented in Table 3.18 and Table 3.19.

Table 3.18

Descriptive Statistics for ORGJP Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
ORGJP	7	.566	18.62	6.36	.899

Note: ORGJP = Organisational justice perceptions

Table 3.19

Descriptive Statistics for the ORGJP Subscales

ORGJP subscales	No. of items	Inter-item correlation mean	Total item mean	SD	α
Consult	3	.620	7.10	3.12	.826
Procedural Fairness	4	.684	11.52	3.85	.895
Distributive	4	.776	11.22	3.10	.933

As Table 3.19 shows, the reliability coefficient value for the Consult subscale was .826, and considered to be excellent (Taber, 2017). The corrected item-total correlation showed that all items correlated above .30 with the total score (Pallant, 2010). The mean inter-item correlation is .62, with values ranging from .55 to .71, suggesting a strong relationship. None of the items indicated that if deleted the Cronbach alpha would significantly increase. The three items were retained for further analysis.

The Procedural Justice subscale's internal consistency coefficient was .895, well above the normal cut off point of .70 (Nunnally, 1978). In terms of the corrected item-total correlation, all items correlated above .30. The inter-item correlation is .68, with values ranging from .64 to.72, suggesting a very strong relationship. None of the items indicated that if deleted the Cronbach alpha would increase significantly. The four items were, therefore, considered for further analysis.

The Distributive subscale has a reliability coefficient of .933, considered very high and excellent (Taber, 2017). The corrected item-total correlation had items above .30 (Pallant, 2010). The inter-item correlation was .78, with values ranging from .68 to .87, also considered to be a strong relationship (Hair et al., 2018). None of the items showed would result in an increase in Alpha value if deleted, therefore, the four items were retained and considered for further analysis.

3.14.4.2 Exploratory factor analysis

The EFA ORGJP measure was performed on the newly created dimensions to determine their factor structures. The EFA was conducted utilising principal axis factoring (PAF) with direct oblimin rotation.

The results for the Consult subscale showed a KMO value of .70, Bartlett's Test of Sphericity test obtained a value of 221.663 (df =3; p = 0.00) - indicating the factor analysability of the subscale. The eigen value-rule of greater than 1 was met. This, together with the scree plot presentation indicate that a single factor was extracted, which accounted for 62.96% of the total variance. 3(0.0%) of the residual correlations were larger than .05, suggesting that the factor solution provided a credible explanation for the observed inter-item correlation matrix. The factor matrix solution depicted in Table 3.20 showed that all factor loadings were above.50.

Table 3.20

Factor Matrix for the Consult Subscale

Item	Factor (1)
JustP1	.816
JustP2	.872
JustP6	.680

For the Procedural Fairness subscale, the KMO value of .846 and Bartlett's Test of Sphericity obtained a statistic value of 437.621 (df =6; p =0.00). These figures represented factor analysability of the subscale. In terms of the eigen- value, it was greater than one, complemented by the scree plot, and both indicated that a single factor was extracted. The extracted factor contributed 68.52% of the total variance. The factor matrix indicated that all items were loaded on the single factor with values above .50. There were 15(71%) no-redundant residuals with absolute values greater than .05. The factor matrix is shown in Table 3.21.

Table 3.21

Factor Matrix for the Procedural Fairness Subscale

Item	Factor (1)
JustP3	.797
JustP4	.871
JustP5	.833
JustP7	808

For the Distributive subscale, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value of .848 and the Bartlett's Test of Sphericity obtained a value of 670.480 (df = 6; p = 0.00) indicating factor analysability of the correlation matrix (Field, 2005). The Eigen-value was above the value of one, and the scree plot also indicated that a single factor, which accounted for 78.25% of the total variance was extracted. The factor matrix indicated that all the four items loaded on the single factor with values above .50. 0(0.0%) of the residual correlations were larger than .05, suggesting that the factor solution provided a credible explanation for the observed inter-item correlation matrix. The factor matrix is depicted in Table 3.22.

Table 3.22

Factor matrix for the Distributive subscale

Item	Factor (1)
JustP8	.931
JustP9	.918
JustP10	.917
JustP11	.762

3.14.4.3 Confirmatory factor analysis

After the EFA, CFA was conducted on the ORGJP scale. The ORGJP scale consisted on six observed variables and two latent variables. The ORGJP measurement model had 11 observed variables regressed three latent variables. The results of the CFA are shown in Table 3.23.

Table 3.23

Goodness of Fit Statistics for the ORGJP Measurement Model

X^2	S-BX^2	df	S-BX^2/df	NNFI	CFI	RMR	SRMR	RMSEA	P value (close)
101.738	63.490	41	1.55	1.00	0.99	.067	.051	0.0542	.373

Note: X2 = Chi-square; S-BX2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA= root mean square error of approximation *p < .05.

Table 3.23 indicates that a close fit model was obtained (p>.05). In addition, the RMSEA value of .0542 indicate reasonable fit (Hair et al., 2018) Based on these goodness of fit statistics, good model fit could be concluded.

An inspection of the results showed that all factor loadings were statistically significant (z ≥ 1.64). The completely standardized Lambda-X solution revealed all factor loadings exceeded the .4 cut-off value. Loadings ranged from .73 (item JustP6) to .93 (item JustP10). Based on the overall results, it could be concluded that the model achieved a good fit.

3.14.5 Affective Commitment (AFFCOM) scale

Affective commitment was measured using the Allen and Meyer's (1996) affective commitment scale. The eight items were rated on a 5-point scale, ranging from *1 (totally disagree) to 5 (totally agree)*. An example of the items is - *"I would be very happy to spend the rest of my career with this organisation"*. The reported alpha of the scale is .78 (Heponiemi et al., 2011).

3.14.5.1 Item analysis

Initial item analysis on the Affective Commitment scale indicated that item AfComm7 correlated poorly with other items. It was, therefore, deleted and the following only items AfComm1, AfComm2, AfComm3, AfComm4, AfComm6 and AfComm8 were included in the final item analysis. The results of the analysis are presented in Table 3.24.

Table 3.24

Descriptive Statistics for AFFCOM Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
AfComm	7	.477	23.57	6.01	.865

As indicated in Table 3.24, the AFFCOM scale had a high reliability coefficient value of .865, well above the acceptable cut-off point of .70 (Hair et al., 2018). The corrected item-total correlation showed that all items correlated above .30 with the total score (Pallant, 2010). The mean inter-item correlation was .48, with values ranging from .29 to .76, suggesting a moderate to high relationship. None of the items indicated that if deleted the Cronbach alpha would significantly increase. The seven items were, therefore, retained for further analysis.

3.14.5.2 Exploratory factor analysis

Exploratory factor analysis of the AFFCOM scale showed a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value of .886 and the Bartlett's Test of Sphericity value of 581.065 (df = 21; p = 0.00) indicating factor analysability of the correlation matrix (Field, 2005). The Eigen-value rule of above one met, and the scree plot also indicated that a single factor, which accounted for 49.69% of the total variance was extracted. The factor matrix indicated that all the seven items were loaded on the single factor with values above .50 (Comrey & Lee's, 1992). There were 3(14.0%) non-redundant residuals with absolute values greater than .05. The factor matrix is depicted in Table 3.25.

Table 3.25

Factor Matrix for the AFFCOM Subscale

Item	Factor (1)
AfComm1	.613
AfComm2	.546
AfComm3	.696
AfComm4	.838
AfComm5	.732
AfComm6	.522
AfComm8	.899

3.14.6 Psychological Contract Breach (PCB) scale

The perceptions of psychological contract breach were measured using 5 items adapted from Robinson and Morrison (2000) and Rousseau (2000). The items were measured on a 5-point Likert Scale determining the extent to which an employee perceives that the organisation has kept its promises. Sample item is: *'Almost all promises made by my employer have been kept so far'.* The reported alpha reliability of the scale is .83 (Gupta et al., 2016).

3.14.6.1 Item analysis

Item analysis was conducted on the five items of the Psychological Contract Breach (PCB) scale. The results showed a very high reliability coefficient value of .916, suggesting high internal consistency of the items (Nunnally, 1978). In terms of the corrected item-total correlations, all values were above .30 (Pallant, 2010). The mean inter-item correlation was .69, with values ranging from .52 to .89, suggesting a strong relationship (Pallant, 2010). None of the items would, however, result in a significant increase in Cronbach alpha when deleted, therefore, all items were retained. This is depicted in Table 3.26.

Table 3.26

Descriptive statistics for PCB scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
PCB	5	.690	12.84	4.87	.916

3.14.6.2 Exploratory factor analysis

The PCB scale achieved a Kaiser-Meyer-Olkin measure of sampling adequacy value of .839 and the Bartlett's Test of Sphericity obtained a value of 771.414 (df = 10; p = 0.00) which provided enough evidence that the correlation matrix was factor analysable (Field, 2005). Only one factor with an eigen value greater than 1 was obtained. The scree plot also showed that a single factor was extracted. This factor contributed 70.07% of the total variance. The factor matrix indicated that all the items loaded on one factor satisfactorily as all factor loadings were larger than .50 (Comrey & Lee's, 1992). The resultant factor structure is shown in Table 3.27. Additionally,

5(50.0%) of the residual correlations were larger than .05 suggesting that the factor solution provided a credible explanation for the observed inter-item correlation matrix. The unidimensionality assumption was thus supported.

Table 3.27

Factor Matrix for the PCB Scale

Item	Factor (1)
PCB1	.908
PCB2	.926
PCB3	.860
PCB4	.677
PCB5	.788

3.14.7 Revenge (REVENG) scale

Feelings of retaliation or revenge were measured using an instrument developed by Wade (1989) which measures intention to retaliate or feelings of revenge using five items or statements. The items were measured on a 5-point Likert Scale, ranging from *1 – Never to 5- Always.* The reliability of the scale was found to be .86 (Bradfield and Aquino, 1999). An example of an item on the scale is *'I wish that something bad could happen to my organisation.*'

3.14.7.1 Item analysis

A Cronbach alpha of .826 was obtained for the five-item REVENG scale. This value is above the critical cut-off value of .80 and, therefore considered acceptable in this study (Nunnally, 1978). All the corrected item-total correlations were acceptable, that is, larger than .30 (Pallant, 2010). The mean inter-item correlation was .554, with values ranging from .42 to .75, suggesting a strong relationship (Pallant, 2010). None of them would have increased the Cronbach alpha when deleted, therefore, all the items were retained. The mean inter-item correlation is .49, with values ranging from .33 to .58. This suggests quite a moderately strong relationship among items (Pallant, 2010). The output is shown in Table 3.28.

Table 3.28

Descriptive Statistics for REVENG Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
REVENG	5	.554	7.60	3.39	.826

3.14.7.2 Exploratory factor analysis

In terms of EFA, the Revenge scale had a Kaiser-Meyer-Olkin measure of sampling adequacy value of .808. The Bartlett's Test of Sphericity obtained a value of 439.922 (df = 10; p = 0.00) which allowed for the identity matrix null hypothesis to be rejected. Enough evidence that the correlation matrix was factor analysable was, therefore, provided (Field, 2005).

Only one factor with an eigenvalue greater than 1 was observed, and the scree plot also indicated that a single factor was extracted, and this factor accounted for 56.20% of the total variance. The factor matrix showed that all the items satisfactorily loaded on one factor as the factor loadings were larger than .50. The resultant factor structure is shown in Table 3.29. Only 40% of the residual correlations were larger than .05 suggesting that the factor solution provided an acceptable explanation for the observed inter-item correlation matrix. Uni-dimensionality of the scale was, therefore, supported.

Table 3.29

Factor Matrix for the REVENG Scale

Item	Factor (1)
Rvnge1	.740
Rvnge2	.785
Rvnge3	.594
Rvnge4	.761
Rvnge5	.845

3.14.8 Conscientiousness (CONSC) Scale

Items to measure Conscientiousness were taken from the Big Five Inventory (BFI) (John, Naumann & Soto, 2008). The nine items are like those found in established personality tests, such as the NEO-PI-R (McCrae & Costa, 1987, Johnson, 2005), as well as those in the International Personality Item Pool (Goldberg, 1999). The items

were measured on a 5- point Likert scale with 1- *strongly disagree* and 5- *strongly agree*. Internal consistency of the items has been shown to be very high by several authors; for example, Bowling and Gruys (2010) found alpha of .84; Bowling et al., (2011) found .82, while Penney et al. (2011) found .89.

3.14.8.1 Item analysis

For the Conscientiousness scale, item analysis showed internal consistency coefficient measure of .846 which was acceptable and well above the cut-off point of .70 (Nunnally, 1978). The corrected item-total correlations were all above .30 of the total score (Pallant, 2010). The mean inter-item correlation was .392, with values ranging from .20 to .56, suggesting a low to moderate relationship. None of the items indicated that if deleted, the Cronbach alpha would increase. The item analysis results are shown in Table 3.30.

Table 3.30

Descriptive Statistics for CONSC Scale

Scale	No. of items	Inter-item correlation mean	Total item mean	SD	α
CONSC	9	.392	37.48	5.49	.846

Note: CONSC = Conscientiousness

3.14.8.2 Exploratory factor analysis

The initial EFA for the CONSC scale indicated two factors, with all reversed items, that is, item Consc2R, item Consc4R, item Consc5R, and item Consc9R loading on one factor and all positive score loading on another factor; theoretically, they measure negative and positive conscientious behaviour, respectively. To avoid two factors forcing into one factor was, then, preferred. The results showed that the Kaiser-Meyer-Olkin measure of sampling adequacy was .875; the Bartlett's Test of Sphericity statistic was 562.536 (df =35; p = 0.00). These two indicated the correlation matric was factor analysability (Field, 2005). An Eigen-value above one was also obtained, complemented by the scree plot which also showed that only a single factor was extracted. This factor accounted for 39.55% of the total variance. The factor matrix showed that all the items were loaded on a single factor with loadings above .50 (Comrey & Lee's, 1992). 19(52%) non-redundant residuals had absolute values

greater than .05. This suggested that the factor solution provided an acceptable explanation for the observed inter-item correlation matrix. Uni-dimensionality of the scale was, therefore, supported. The resultant factor structure is shown in Table 3.31.

Table 3.31

Factor Matrix for the Conscientiousness Scale

Item	Factor (1)
Consc1	.697
Consc2R	.660
Consc3	.601
Consc4R	.587
Consc5R	.571
Consc6	.543
Consc7	.659
Consc8	.721
Consc9R	.599

3.15 Measuring instruments validation summary

Table 3.32 summarises the results of the item analyses conducted on each of the instruments used in the study.

Table 3.32

Descriptive Statistics Summary of the Measuring Instruments

Scale	Sample size	Number of items	Mean	Standard deviation	Cronbach Alpha	Number of items deleted
CWB	188	7	11.14	3.13	.74	3
NEGAFF	188	4	10.23	4.35	.86	2
OCCSTR	188	6	19.71	5.58	.87	10
ORGJP	188	7	18.62	6.36	.90	0
AFFCOM	188	7	23.57	6.01	.87	1
PCB	188	5	12.84	4.87	.92	0
REVENG	188	5	7.60	3.39	.83	0
CONSC	188	9	37.48	5.49	.85	0

Note: CWB = Counterproductive work behaviour; NEGAFF = Negative Affect; OCCSTR = Occupational Stress; ORGJP = Organisational Justice Perceptions; AFFCOM = Affective Commitment; PCB = Psychological Contract Breach; REVENG = Revenge; CONSC = Conscientiousness

Table 3.32 indicates that all the eight scales had Cronbach alpha values above .70 (Nunnally, 1978). This was after some items were deleted from the following scales: CWB (3 items), NEGAFF (2 items), OCCSTR (10 items) and AFFCOM (1 item). No items were deleted from ORGJP, PCB, REVENG and CONSC scales, therefore, it can be confidently surmised that all the scales finally used for the analysis of the results showed acceptable and satisfactory reliability measures.

The three multi-dimensional scales, that is CWB, OCCSTR and ORGJP, were analysed by means of confirmatory factor analysis and showed good model fit, justifying the inclusion of all instruments in the final analysis, as well as in the operationalisation of the various latent variables they were meant to reflect.

CHAPTER 4: RESULTS

4.1 Introduction

This study sought to understand the psychological processes underlying academics' engaging in counter-productive work behaviours by putting forward a possible nomological network of factors that might influence such behaviours. The argument in putting forward the network was that, unlike in previous studies, feelings of psychological contract breach are at the centre of academics engaging in counter-productive work behaviour. Psychological contract breach perceptions are understood as having direct or indirect influence on variables, such as occupational stress and negative emotions (stress reaction route); justice perceptions and affective commitment (injustice route); retaliation feelings (revenge route) and that low conscientiousness elicits counter-productive work behaviour. The different relationships between the proposed variables and how these relationships lead to counter-productive work behaviour were investigated. The present chapter reports on the empirical evidence pertaining to the investigation.

To begin with, the chapter presents the characteristics of the sample that participated in the study. The measurement and structural model fit are reviewed. A basket of fit indices, such as statistical significance and size of the parameter estimates which were derived from the LISREL programme were used to evaluate the measurement model fit. In terms of the Structural model fit, it was evaluated using adequacy of structural model parameter estimates derived from structural equation modelling in LISREL. Beta and Gamma matrices were used to determine the significance of the hypothesised paths, while modification indices were inspected to determine possible other pathways that could be identified to improve the model fit.

4.2 Characteristics of sample

The sample's characteristics, that is, gender, race and years of service are shown in the Table 4.1 below.

Table 4.1

Sample's Characteristics

		Frequency	Percent
Gender	Female	92	48.9
	Male	96	51.1
	Total	188	100.0

		Frequency	Percent
Race	Black	59	31.4
	Coloured	10	5.3
	Indian/Asian	5	2.7
	White	114	60.6
	Total	188	100.0

		Frequency	Percent
Years of Service	Less than 2years	7	3.7
	2-5years	37	19.7
	5-10yrs	47	25.0
	More than 10yrs	97	51.6
	Total	188	100.0

As indicated in Table 3.2, most of the respondents were males, 51.1%, while 48.9% were females. These results are in line with Naidu (2018) who state that there are more males than female academics in the South African higher education system. In terms of race, white academic respondents constituted 60.6%, followed by blacks 31.4%, then coloured 5.3%, and lastly Indians/Asians 2.7%. With regards to years of experience, most of the respondents, 51.6%, had more than 10 years working experience, followed by those with between 5-10years constituting 25.0%, then 2-5years were19.7% and, lastly, less than 2 years work experience constituted 3,7%.

4.3 Item parcels

In structural equation modelling, item parcels were created for each latent variable (from individual items) to reflect the different scale/subscales/dimensions of each

respective latent variable. The reason for creating the item parcels was to fit the measurement and the structural models. The rationale for creating item parcels was to avoid the fallacy of using individual items, a situation often associated with very complicated models with several parameters that need to be estimated. According to Matsunaga (2008), the use of item parcels have been associated with stabilizing parameter estimates and to improve model fit, however, they are effective when a scale is unidimensional and some researchers (Marsh et al., 1998; Stephenson & Holbert, 2003) argue that item parcels distort estimation.

Despite the above criticism, the use of item parcels continues to dominate research studies that use structural equation modelling technique because, (1) they promote the communality across indicators, increase the common-to-unique ratio for each indicator, and reduce random error (Little & Rubin, 2002) (2) data that is parcel-based has a higher chance of approximating the true construct distribution compared to item-based data (Bandalos, 2002; Nasser & Wisenbaker, 2003), and (3) doing structural equation modelling using item- parcelled data provides more stable estimates and fit the data better than their item-based counterparts (Bandalos, 2002; Stephenson & Holbert, 2003). Considering these pro-item parcel arguments, it was decided that at least two item parcels per each latent variable will be created using odd-even number method for unidimensional scales (Affective Commitment (AFFCOM); Psychological Contract Breach (PCB), Negative Affect (NEGAFF); and Revenge (REVENG). For the multi-dimensional scales, items that belonged to each subscale were put together in one parcel. This applied to Counterproductive Work Behaviour (CWB) (two parcels), Occupational Stress (OCCSTR) (three parcels), Organisational Justice Perceptions (ORGJP) (three parcels). Item parcels for the Conscientiousness (CONSC) (two parcels) measure were created by putting negatively and positively worded items in separate parcels.

4.4 Measurement model

As alluded to previously, a measurement model reflects the relationship between the different latent variables and their indicators (item parcels). According to Dimantopolous and Siguaw (2000), fitting the measurement model serves to determine the reliability and validity of scales used to represent the observed variables. The examination of measurement model fit in this study was done using

Confirmatory Factor Analysis (CFA) with LISREL 8.8 (Diamantopoulos & Siguaw, 2000), with the assumption that all data was not normal, hence, the use of RML estimation method. Using CFA enabled a determination of how successful the researcher was in operationalising the latent variables. The interpretation of fit indices produced by the CFA were used to examine model fit.

4.4.1 Measurement model fit

The need to fit the measurement model prior to the structural model is premised on the understanding that, if it can be shown that the indicator variables used to operationalise the latent variables successfully reflected that latent variables they were meant to represent, then the comprehensive model fit indices can be interpreted without any ambiguity, for, or against structural model (Diamantopolous & Siguaw, 2000).

After the asymptotic covariance matrix was calculated, the measurement model was fitted to the data using the RML estimation method since that data was assumed not to be normal. The first and second attempts of fitting the measurement model failed to converge the model since some parameters (for example, Completely Standardised Solution Lambda -X Matrix and Squared Multiple Correlations for X – Variables) had inadmissible values. After some deletions of some items in the Negative Affect (NEGAFF) scale and creating new item parcels, as well as creating items parcels using the negative and positive items for the Conscientiousness (CONSC) scale, the model finally converged. The visual representation of the fitted measurement model is shown in Figure 4.1.

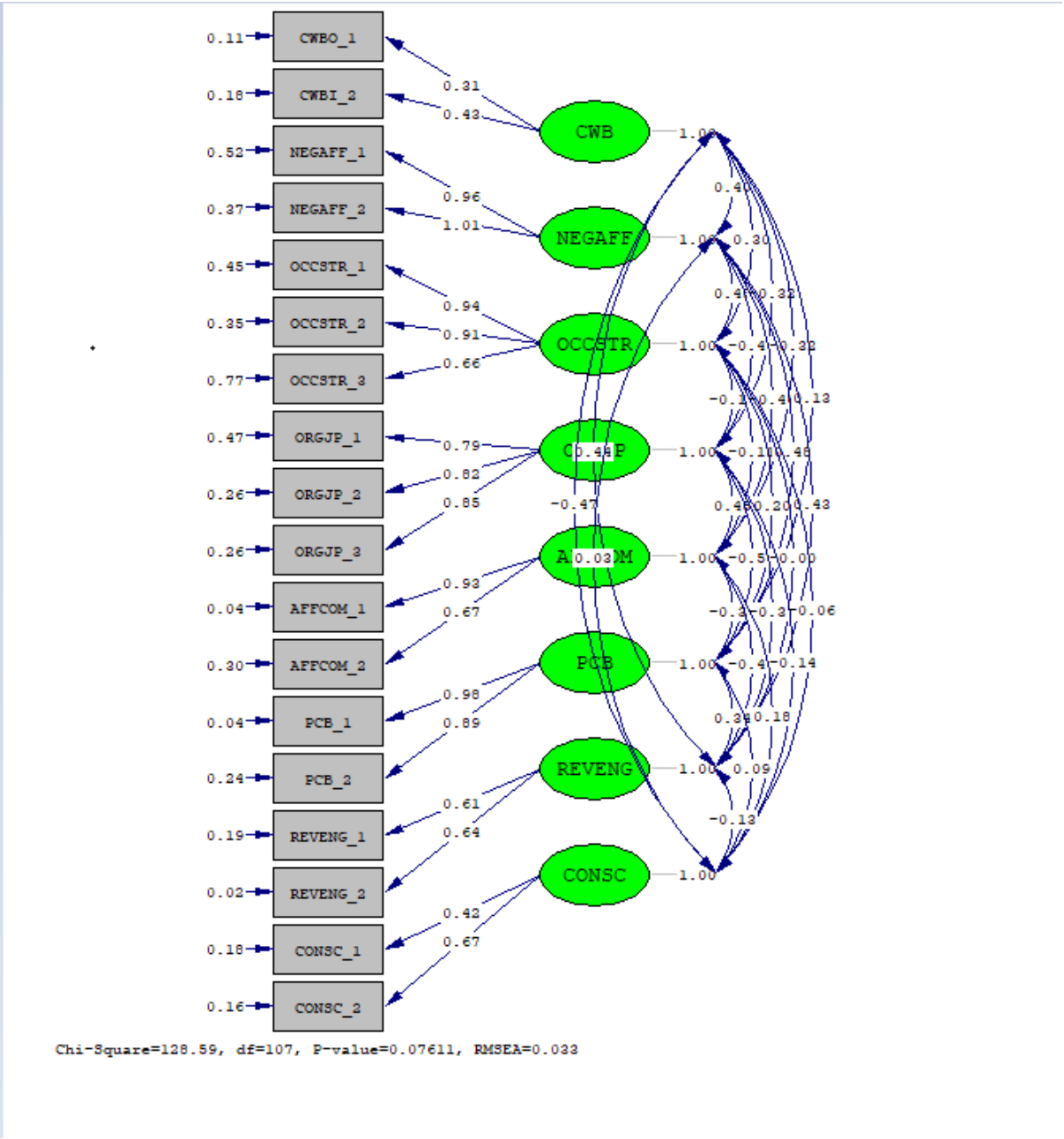


Figure 4.1 Measurement Model

The null hypothesis of exact fit (H_{a2}: RMSEA > 0) which stated that the measurement model provides a perfect account of the way the latent variables manifest themselves in the indicator variables, was tested via the Satorra-Bentler scaled chi-square statistic. As indicated in Table 4.2, a value of 128.590 (p = 0.0761) for the Satorra-Bentler scaled chi square statistics showed that the hypothesis of exact fit (H_{a3}: RMSEA > 0) was rejected. According to Diamantopolus and Siguaw (2000), obtaining exact fit is implausible when non-simulated data is utilised and when the population approximates reality. The rejection of the exact fit hypothesis required the testing of

the close fit null hypothesis (H_{a3}: RMSEA > .05). The results in Table 4.2 show that the p- value obtained for test of close fit was above .05 (RMSEA < .05) = 0.926 indicating statistical close fit, thus failing to reject the null close fit hypothesis. The RMSEA is often used to indicate how well a model with unknown but optimally chosen values, fit the population covariance matrix if it were available (Brown & Cudeck, 1993). As such, the value of 0.03258 obtained (Table 4.2) showed good fit in tandem with the cut-off value points established by Hair *et al.* (2006), that values of less than .05 show good fit, those between .05 and under .08 show reasonable fit and values between .08 and .10 show mediocre fit while values more than .10 show poor fit.

Table 4.2

Goodness-of-fit statistics for the CWB measurement model

Degrees of Freedom = 107
Minimum Fit Function Chi-Square = 138.637 (P = 0.0215)
Normal Theory Weighted Least Squares Chi-Square = 133.867 (P = 0.0403)
Satorra-Bentler Scaled Chi-Square = 128.590 (P = 0.0761)
Chi-Square Corrected for Non-Normality = 258.048 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 21.590
90 Percent Confidence Interval for NCP = (0.0; 54.258)
Minimum Fit Function Value = 0.741
Population Discrepancy Function Value (F0) = 0.115
90 Percent Confidence Interval for F0 = (0.0; 0.290)
Root Mean Square Error of Approximation (RMSEA) = 0.0328
90 Percent Confidence Interval for RMSEA = (0.0; 0.0521)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.926
Expected Cross-Validation Index (ECVI) = 1.372
90 Percent Confidence Interval for ECVI = (1.257; 1.547)
ECVI for Saturated Model = 1.829
ECVI for Independence Model = 13.551
Chi-Square for Independence Model with 153 Degrees of Freedom = 2498.033
Independence AIC = 2534.033
Model AIC = 256.590
Saturated AIC = 342.000
Independence CAIC = 2610.289
Model CAIC = 527.722
Saturated CAIC = 1066.432
Normed Fit Index (NFI) = 0.949
Non-Normed Fit Index (NNFI) = 0.987
Parsimony Normed Fit Index (PNFI) = 0.663
Comparative Fit Index (CFI) = 0.991
Incremental Fit Index (IFI) = 0.991
Relative Fit Index (RFI) = 0.926
Critical N (CN) = 210.332
Root Mean Square Residual (RMR) = 0.0438
Standardized RMR = 0.0485
Goodness of Fit Index (GFI) = 0.926
Adjusted Goodness of Fit Index (AGFI) = 0.882
Parsimony Goodness of Fit Index (PGFI) = 0.580

4.4.2 Measurement model parameter estimates and interpretations

The magnitude and the statistical significance of the slope of the regression of the observed variables on their respective latent variables was also important to establish, in order to determine the validity of the measures used to operationalise the latent variables. According to Diamantopoulos and Siguaw (2000) regression coefficients of the manifested variables on the latent variables are significant ($p < .05$) if the absolute values of z are all above 1.64 and when all the hypotheses are stated in a directional manner. Table 4.3 shows the unstandardized lambda-X matrix for the measurement model.

Table 4.3

Lambda -X Matrix (Unstandardised Solution)

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENGE	CONSC
CWB_1	0.312 (0.044) 7.046	- -	- -	- -	- -	- -	- -	- -
CWB_2	0.429 (0.045) 9.474	- -	- -	- -	- -	- -	- -	- -
NEGAFF_1	- -	0.955 (0.066) 14.540	- -	- -	- -	- -	- -	- -
NEGAFF_2	- -	1.006 (0.074) 13.627	- -	- -	- -	- -	- -	- -
OCCSTR_1	- -	- -	0.937 (0.069) 13.655	- -	- -	- -	- -	- -
OCCSTR_2	- -	- -	0.905 (0.074) 12.281	- -	- -		- -	- -
OCCSTR_3	- -	- -	0.658 (0.081) 8.076		- -	- -	- -	- -
ORGJP_1	- -	- -	- -	0.786 (0.056) 14.020	- -	- -	- -	- -
ORGJP_2	- -	- -	- -	0.817 (0.047) 17.198	- -	- -	- -	- -
ORGJP_3	- -	- -	- -	0.850 (0.049) 17.465	- -	- -	- -	- -
AFFCOM_1	- -	- -	- -	- -	0.926 (0.061) 15.070	- -	- -	- -
AFFCOM_2	- -	- -	- -		0.673 (0.051) 13.260	- -	- -	- -
PCB_1	- -	- -	- -	- -	- -	0.984 (0.057) 17.195	- -	- -
PCB_2	- -	- -	- -	- -	- -	0.893 (0.066) 13.628	- -	- -
REVENG_1	- -	- -	- -	- -	- -	- -	0.606	- -

							(0.066) 9.242	
REVENG_2	--	--	--	--	--	--	0.643 (0.052) 12.279	--
CONSC_1	--	--	--	--	--	--	--	0.423 (0.044) 9.707
CONSC_2	--	--	--	--	--	--	--	0.672 (0.060) 11.164

Note: CWBO_1 = Counterproductive work behaviour parcel 1; CWBI_2 = Counterproductive work behaviour parcel 2; NEGAFF_1 = Negative affect parcel 1; NEGAFF_2 = Negative affect parcel 2; OCCSTR_1 = Occupational stress parcel 1; OCCSTR_2 = Occupational stress parcel 2; OCCSTR_3 = Occupational stress parcel 3; ORGJP_1 – Organisational justice perceptions parcel 1; ORGJP_2 = Organisational justice perceptions parcel 2; ORGJP_3 = Organisational justice perceptions parcel 3; AFFCOM_1 = Affective commitment parcel 1; AFFCOM_2 = Affective commitment parcel 2; PCB_1 = Psychological contract breach parcel 1; PCB_2 = Psychological contract breach parcel 2; REVENG_1 = Revenge parcel 1; REVENG_2 = Revenge parcel 2; CONSC_1 = Conscientiousness parcel 1; CONSC_2 = Conscientiousness parcel 2.

Table 4.3 indicated that all the z scores showed significant factor loadings and provided validity evidence in favour of the indicators used to operationalise the latent variables. Since all the factor loadings are statistically significant, all the 18 null hypotheses ($H_{at}: \lambda_{ij} > 0$) were, therefore, rejected, however, Diamantopoulos and Siguaw 2000) caution on reliance on unstandardised lambda-X factor matrix estimates because indicators of the same latent variable may be measured on very different scales. As such, direct comparisons of the magnitude of the loadings are clearly not the correct way. To circumvent this shortcoming, the factor loadings of the completely standardised solution matrix was considered, and the corresponding factor loadings are shown in Table 4.4.

Table 4.4

Completely Standardised Lambda-X Solution Matrix

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENGE	CONSC
CWB_1	0.693	--	--	--	--	--	--	--
CWB_2	0.707	--	--	--	--	--	--	--
NEGAFF_1	--	0.799	--	--	--	--	--	--
NEGAFF_2	--	0.856	--	--	--	--	--	--
OCCSTR_1	--	--	0.8145	--	--	--	--	--
OCCSTR_2	--	--	0.838	--	--		--	--
OCCSTR_3	--	--	OTR_3		--	--	--	--
ORGJP_1	--	--	--	0.753	--	--	--	--
ORGJP_2	--	--	--	0.849	--	--	--	--
ORGJP_3	--	--	--	0.859	--	--	--	--
AFFCOM_1	--	--	--	--	0.978	--	--	--
AFFCOM_2	--	--	--		0.775	--	--	--
PCB_1	--	--	--	--	--	0.982	--	--
PCB_2	--	--	--	--	--	0.876	--	--
REVENG_1	--	--	--	--	--	--	0.809	--
REVENG_2	--	--	--	--	--	--	0.973	--
CONSC_1	--	--	--	--	--	--	--	0.708
CONSC_2	--	--	--	--	--	--	--	0.857

Note: CWBO_1 = Counterproductive work behaviour parcel 1; CWBI_2 = Counterproductive work behaviour parcel 2; NEGAFF_1 = Negative affect parcel 1; NEGAFF_2 = Negative affect parcel 2; OCCSTR_1 = Occupational stress parcel 1; OCCSTR_2 = Occupational stress parcel 2; OCCSTR_3 = Occupational stress parcel 3; ORGJP_1 – Organisational justice perceptions parcel 1; ORGJP_2 = Organisational justice perceptions parcel 2; ORGJP_3 = Organisational justice perceptions parcel 3; AFFCOM_1 = Affective commitment parcel 1; AFFCOM_2 = Affective commitment parcel 2; PCB_1 = Psychological contract breach parcel 1; PCB_2 = Psychological contract breach parcel 2; REVENG_1 = Revenge parcel 1; REVENG_2 = Revenge parcel 2; CONSC_1 = Conscientiousness parcel 1; CONSC_2 = Conscientiousness parcel 2.

The completely standardised factor loadings solution matrix differs slightly from the unstandardised one, in the sense that it is a representation of mean changes in indicator variables, given one standard deviation in their corresponding latent variable, while all the other factors remain constant (Diamantopolous & Siguaw, 2000). A closer look at the factor loadings in Table 4.4 indicate that they are all above the cut-off point of value of .71 in tandem with recommendations by to Hair et al (2006), implying that half of the variance in the indicator variables is explained by the corresponding latent variable, except for OCCSTR_3 (0.601) that missed the cut-off point.

In addition to the above, the squared multiple correlations (R^2) for the observed variables on their corresponding constructs (latent variables) was also inspected. Meloun and Militky (2011) state that R^2 represents the communality estimate for an indicator variable, that is, the percent of variance in each indicator variable explained by its latent variable. When the R^2 is high, this suggests high indicator reliability. The squared multiple correlations are shown in Table 4.5.

Table 4.5

Squared Multiple Correlations for X Variables

CWBO_1	CWBI_2	NEGAFF_1	NEGAFF_2	OCCSTR_1	OCCSTR_2
0.480	0.500	0.638	0.733	0.662	0.701
OCCSTR_3	ORGJP_1	ORGJP_2	ORGJP_3	AFFCOM_1	AFFCOM_2
0.361	0.568	0.720	0.738	0.956	0.601
PCB_1	PCB_2	REVENG_1	REVENG_2	CONSC_1	CONSC_2
0.965	0.768	0.654	0.947	0.501	0.735

Note: CWBO_1 = Counterproductive work behaviour parcel 1; CWBI_2 = Counterproductive work behaviour parcel 2; NEGAFF_1 = Negative affect parcel 1; NEGAFF_2 = Negative affect parcel 2; OCCSTR_1 = Occupational stress parcel 1; OCCSTR_2 = Occupational stress parcel 2; OCCSTR_3 = Occupational stress parcel 3; ORGJP_1 – Organisational justice perceptions parcel 1; ORGJP_2 = Organisational justice perceptions parcel 2; ORGJP_3 = Organisational justice perceptions parcel 3; AFFCOM_1 = Affective commitment parcel 1; AFFCOM_2 = Affective commitment parcel 2; PCB_1 = Psychological contract breach parcel

1; PCB_2 = Psychological contract breach parcel 2; REVENG_1 = Revenge parcel 1; REVENG_2 = Revenge parcel 2; CONSC_1 = Conscientiousness parcel 1; CONSC_2 = Conscientiousness parcel 2.

As represented in Table 4.5, all the R^2 values were within the acceptable cut-off point of between 0 and 1 (Hair et al., 2006). This meant that, no or little amount of the variance in the indicators could be attributed to random error and non-relevant systematic sources of variance. No threat to reliability and validity could, therefore, be detected, suggesting the successful operationalisation of the latent variables comprising the measurement model.

The theta-delta matrix represents the measurement error, that is, the proportion of item parcel variance as a result of systematic non-relevant and random variances (MacCallum & Austin, 2000). Any value which is less than .50 indicates that less than 50% of the variance in the indicator variable (item parcels) can be attributed to measurement error variance. The values for the completely standardised theta-delta matrix are represented in Table 4.6.

Table 4.6

Theta-Delta Completely Standardised Matrix

CWBO_1	CWBI_2	NEGAFF_1	NEGAFF_2	OCCSTR_1	OCCSTR_2
0.520	0.500	0.362	0.267	0.338	0.299
OCCSTR_3	ORGJP_1	ORGJP_2	ORGJP_3	AFFCOM_1	AFFCOM_2
0.639	0.432	0.280	0.262	0.044	0.399
PCB_1	PCB_2	REVENG_1	REVENG_2	CONSC_1	CONSC_2
0.035	0.280	0.346	0.053	0.499	0.265

Note: CWBO_1 = Counterproductive work behaviour parcel 1; CWBI_2 = Counterproductive work behaviour parcel 2; NEGAFF_1 = Negative affect parcel 1; NEGAFF_2 = Negative affect parcel 2; OCCSTR_1 = Occupational stress parcel 1; OCCSTR_2 = Occupational stress parcel 2; OCCSTR_3 = Occupational stress parcel 3; ORGJP_1 – Organisational justice perceptions parcel 1; ORGJP_2 = Organisational justice perceptions parcel 2; ORGJP_3 = Organisational justice perceptions parcel 3; AFFCOM_1 = Affective commitment parcel 1; AFFCOM_2 = Affective commitment parcel 2; PCB_1 = Psychological contract breach parcel 1; PCB_2 = Psychological contract breach parcel 2; REVENG_1 = Revenge parcel 1; REVENG_2 = Revenge parcel 2; CONSC_1 = Conscientiousness parcel 1; CONSC_2 = Conscientiousness parcel 2.

Table 4.6 indicates that, save for the OCCSTR_3 (0.639), all the observed variables obtained values less than .50, indicating that the percentage of variance in the indicator variables could be explained in terms of the latent variables they were meant

to represent. This increased the confidence of the successful operationalisation of the measurement model.

4.4.3 Discriminant validity

The inter-correlations of the latent variables in the CWB measurement model were represented by the Phi matrix. The purpose of a phi matrix is to determine discriminant validity, that is, the magnitude to which the variables in a model are uncorrelated with variables from which they are supposed to differ (Kline, 2011). The critical cut-off value for discriminant validity is <.90 (Hair et al., 2018). This means that, when inter-correlation values are < .90, discriminant validity is indicated. Table 4.7 represents the completely standardised phi matrix.

Table 4.7

Completely Standardised Phi Matrix

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG	CONSC
CWB	1.000							
NEGAFF	0.398	1.000						
OCCSTR	0.303	0.479	1.000					
ORGJP	-0.319	-0.491	-0.142	1.000				
AFFCOM	-0.317	-0.460	-0.111	0.446	1.000			
PCB	0.127	0.481	0.202	-0.572	-0.350	1.000		
REVENG	0.441	0.433	-0.001	-0.301	-0.463	0.337	1.000	
CONSC	-0.474	0.027	-0.065	-0.137	0.177	0.086	-0.128	1.000

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge.

Table 4.7 shows that all the inter-correlation values were sufficiently low (<.90), indicating that a discriminant validity between all the latent variables in the measurement model was achieved.

4.4.4 Standardised residuals

One way to check model fit is observing the standardised residuals - which are a result of checking the residual divided by its standard error (Joreskog & Sorbom ,1983). When considered as standard normal deviates (z scores), they are expected to be dispersed in a symmetrical manner around zero, an indication that the model fits well.

Diamantopolous and Siguaw (2000) indicate that standardised residual values of more than +258 indicate underestimation of covariances among observed variables, while large negative values more than -258 are indicative overestimation of the covariances among the observed variables. The standardised residual values for the CWB measurement model are presented in Table 4.8.

Table 4.8

Summary Statistics for the CWB Measurement Model Standardised Residuals

Description	Value
Smallest standardised Residual	-3.217
Median Standardised Residual	0.000
Largest Standardised Residual	4.276
Largest Negative Standardised Residuals	
Residual for OCCSTR_1 and NEGAFF_1	-
Residual for AFFCOM_1 and NEGAFF_1	-3.217
Residual for PCB_1 and CWBO_1	-2.955
Residual for CONSC_2 and OCCSTR_2	-2.656
Largest Positive Standardised Residuals	
Residual for OCCSTR_3 and NEGAFF_2	3.444
Residual for AFFCOM_2 and NEGAFF_2	4.276
Residual for AFFCOM_2 and ORGJP_2	3.123
Residual for AFFCOM_2 and ORGJP_3	2.966
Residual for CONSC_1 and NEGAFF_2	3.200

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWBO = counterproductive work behaviour against organisation; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment.

As summarised above, there were four values less than -258 and five bigger than 258. The eight large residuals constituted 5% of the total number standardised residuals. The residual matrix contained ([18*(18+1)]/2) = 171. This means that, about 5% of the observed variances and covariances were not accurately estimated from the measurement model parameter estimates. This percentage was considered sufficiently small not to be a great concern that the model either overestimates or underestimates the covariance among the observed variables in the observed covariance matrix, painting a positive picture of good measurement model fit.

When the standardised residuals are presented on a stem and leaf plot in a collective manner, a good measurement model fit is depicted when the residuals are distributed symmetrically around zero (Figure 4.2).

```
 - 3|20
  - 2|87
  - 2|33210
  - 1|9886655
  - 1|4333322211
  - 0|998887776666555555
 -0|444433333221111111100000000000000000000000000000000000000000000000000
   0|1111111122222334444
   0|567777999
   1|000001124444
   1|5555556666677889
   2|234
   2|
   3|0124
   3|
   4|3
```

Figure 4.2 Stem and Leaf Plot of the Measurement Model Standardised Residuals

An inspection of the stem and leaf plot in Figure 4.2 indicates that the distribution of the standardised residuals seem to be slightly skewed toward the right indicating an underestimation (by the derived model parameter estimates) of the observed variance and covariance terms in the observed covariance matrix. The skewness, however, was not considered of too much concern, and could be further used to comment favourably on the model fit.

The Q- plot of the CWB measurement model was also considered as represented in Figure 4.3. The purpose of a Q-plot is to show the relationship between the horizontal axis of standardised residuals and the quintiles of the normal distribution (Diamantopolous & Siguaw, 2000). When interpreting the Q-plot, the extent to which the data points lie on the 45-degree angle (reference line) is used to determine good model fit. According to Joreskog and Sorbom (1996), extreme deviation from 45-degree angle signals poor model fit. As shown in Figure 4.3, there seems to be reasonable to good model fit as the standardised residuals seem to fall within the 45-degree reference line. The residuals tend to, however, deviate on the upper and lower regions of the X-axis (both positive and negative large residuals), with positive residuals more predominant as also depicted in Table 4.8 and Figure 4.2.

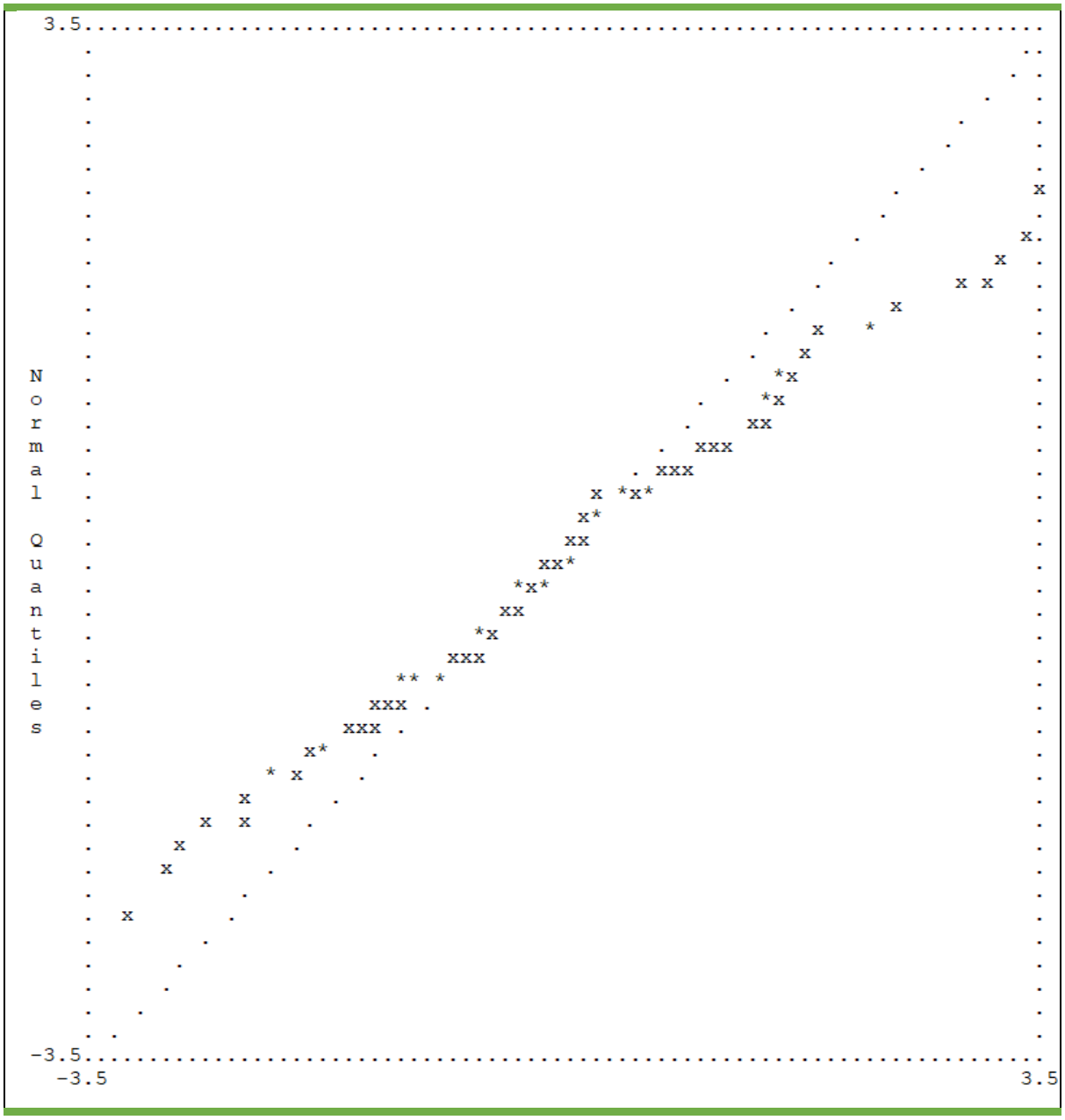


Figure 4.3 Q-Plot for the Measurement Model

4.5 Structural Model

The successful (good) measurement model fit warrants the evaluation of the comprehensive (structural) model. The structural model presented for this study (see Figure 2.1) depicts causal relationships of the exogenous and endogenous variables. The rationale for evaluating the structural model is to corroborate observed data with theorisation of the relationships between the latent variables which was done during the conceptualisation stage.

4.5.1 Fitting the structural model

To fit the comprehensive LISREL structural model, LISREL 8.8 was used to conduct the SEM, focusing on the analysis of the covariance matrix. To derive the model parameter estimates, the Robust Maximum Likelihood estimation was utilised, since the assumption of multivariate normality was rejected right from the onset.

The first round of fitting the structural model showed that the model fitted reasonably well, but there were several inadmissible values. The beta and gamma modification indices were considered for any possible significant improvement to the model fit. In this instance, values of 6.64 would indicate fixed parameters (Diamantopoulos & Siguaw, 2000). If these were set free, the model fit ($p < .01$) was likely to be enhance/improved significantly. The Beta and gamma matrices considered for the improvement of the model fit are shown in Tables 4.9 and 4.10, respectively.

Table 4.9

Modification Indices for Beta

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
CWB	- -	- -	3.078	3.386	- -	2.049	- -
NEGAFF	0.132	- -	- -	9.000	13.713		26.929
OCCSTR	2.524	- -	- -	0.424	0.261		0.077
ORGJP	7.463	10.404	0.318	- -	0.541		1.860
AFFCOM	12.943	5.512	0.065	- -	- -		18.689
PCB	4.296	- -	- -	3.052	1.045	- -	- -
REVENG	268.549	15.787	0.076	3.745	19.650		- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

Table 4.10

Modification Indices for Gamma

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
CWB	- -						
NEGAFF	5.887	- -					
OCCSTR	2.889	- -	- -				
ORGJP	7.571	11.631	0.317	- -			
AFFCOM	2.317	7.005	0.095	1.035	- -		
PCB	1.771	- -	- -	6.654	0.078	- -	
REVENG	- -	22.670	0.078	1.890	17.601	- -	- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge.

As shown in Tables 4.9 and 4.10, large and significant modification indices suggested the existence of several ways in which the model could be improved. An inspection of the modification indices in both Tables indicated that, theoretically sensible, three pathways (highlighted) could be added to the model. These were: ORGJP to NEGAFF (Organisational Justice Perceptions to Negative Affect) with a high modification (MI) of 11.631 – theoretically, academic employees who perceive low justice perceptions would experience negative affect (emotions); NEGAFF to REVENG (Negative Affect to Revenge) with a MI of 26.929 – theoretically, experiences of negative affect by academic employees are likely to develop feelings of revenge, and lastly, AFFCOM to REVENG (Affective Commitment to Revenge) with a modification index of 18.689 – theoretically, low levels of affective commitment are likely to trigger feelings of revenge.

These added pathways seemed to make theoretical sense and, hence, they were adopted. The final modified structural model with these three pathways included is depicted in Figure 4.4.

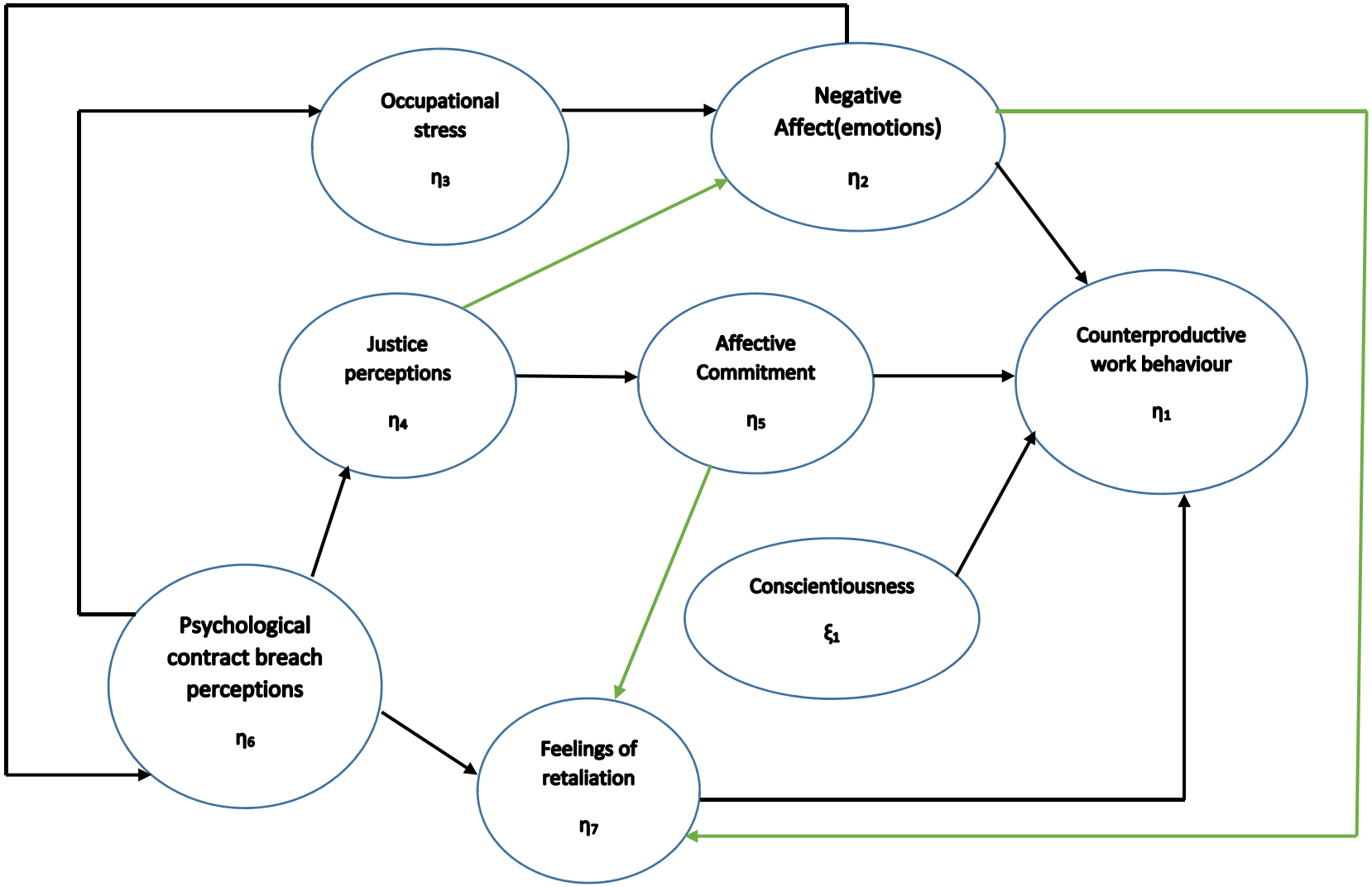


Figure 4.4 Modified Structural Model

Note: Green arrows indicate paths added after model modification

The modified comprehensive LISREL model with three additional pathways added to the structural model was fitted. The goodness of fit results are shown in Table 4.11 and the visual representation of the fitted measurement model is shown in Figure 4.3.

Table 4.11 shows that the modified structural model yielded a Satorra-Bentler chi-square value of 173.289 (p = 0.00158) and 122 degrees of freedom. Such results showed that the exact fit null hypothesis (H_{a2}: RMSEA > 0) had to be rejected, and that the p-value for test of close fit hull hypothesis (H_{a3}: RMSEA > .05) was bigger than 0.5 (Hair et al., 2018), therefore, the null hypotheses of close fit was not rejected. Hair et al. (2018) state that, a model obtains good fit (as in this case) when the RMSEA value is less than .08. As such, the current value of 0.0474 suggested a good model fit.

Based on the above total set of goodness of fit, it was surmised that the comprehensive structural model obtained good fit. In other words, the modified structural model reproduced acceptable observed covariance matrix which provided confidence in the derived parameter estimates and worth reporting on.

Table 4.11

Goodness-of-Fit Statistics for the Comprehensive Modified Structural Model

Degrees of Freedom = 122
Minimum Fit Function Chi-Square = 184.568 (P = 0.000221)
Normal Theory Weighted Least Squares Chi-Square = 181.669 (P = 0.000373)
Satorra-Bentler Scaled Chi-Square = 173.289 (P = 0.00158)
Chi-Square Corrected for Non-Normality = 398.168 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 51.289
90 Percent Confidence Interval for NCP = (20.387; 90.214)
Minimum Fit Function Value = 0.987
Population Discrepancy Function Value (F0) = 0.274
90 Percent Confidence Interval for F0 = (0.109; 0.482)
Root Mean Square Error of Approximation (RMSEA) = 0.0474
90 Percent Confidence Interval for RMSEA = (0.0299; 0.0629)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.590
Expected Cross-Validation Index (ECVI) = 1.451
90 Percent Confidence Interval for ECVI = (1.285; 1.659)
ECVI for Saturated Model = 1.829
ECVI for Independence Model = 13.551
Chi-Square for Independence Model with 153 Degrees of Freedom = 2498.033
Independence AIC = 2534.033
Model AIC = 271.289
Saturated AIC = 342.000
Independence CAIC = 2610.289
Model CAIC = 478.875
Saturated CAIC = 1066.432
Normed Fit Index (NFI) = 0.931
Non-Normed Fit Index (NNFI) = 0.973
Parsimony Normed Fit Index (PNFI) = 0.742
Comparative Fit Index (CFI) = 0.978
Incremental Fit Index (IFI) = 0.978
Relative Fit Index (RFI) = 0.913
Critical N (CN) = 175.008
Root Mean Square Residual (RMR) = 0.0598
Standardized RMR = 0.0711
Goodness of Fit Index (GFI) = 0.903
Adjusted Goodness of Fit Index (AGFI) = 0.863
Parsimony Goodness of Fit Index (PGFI) = 0.644

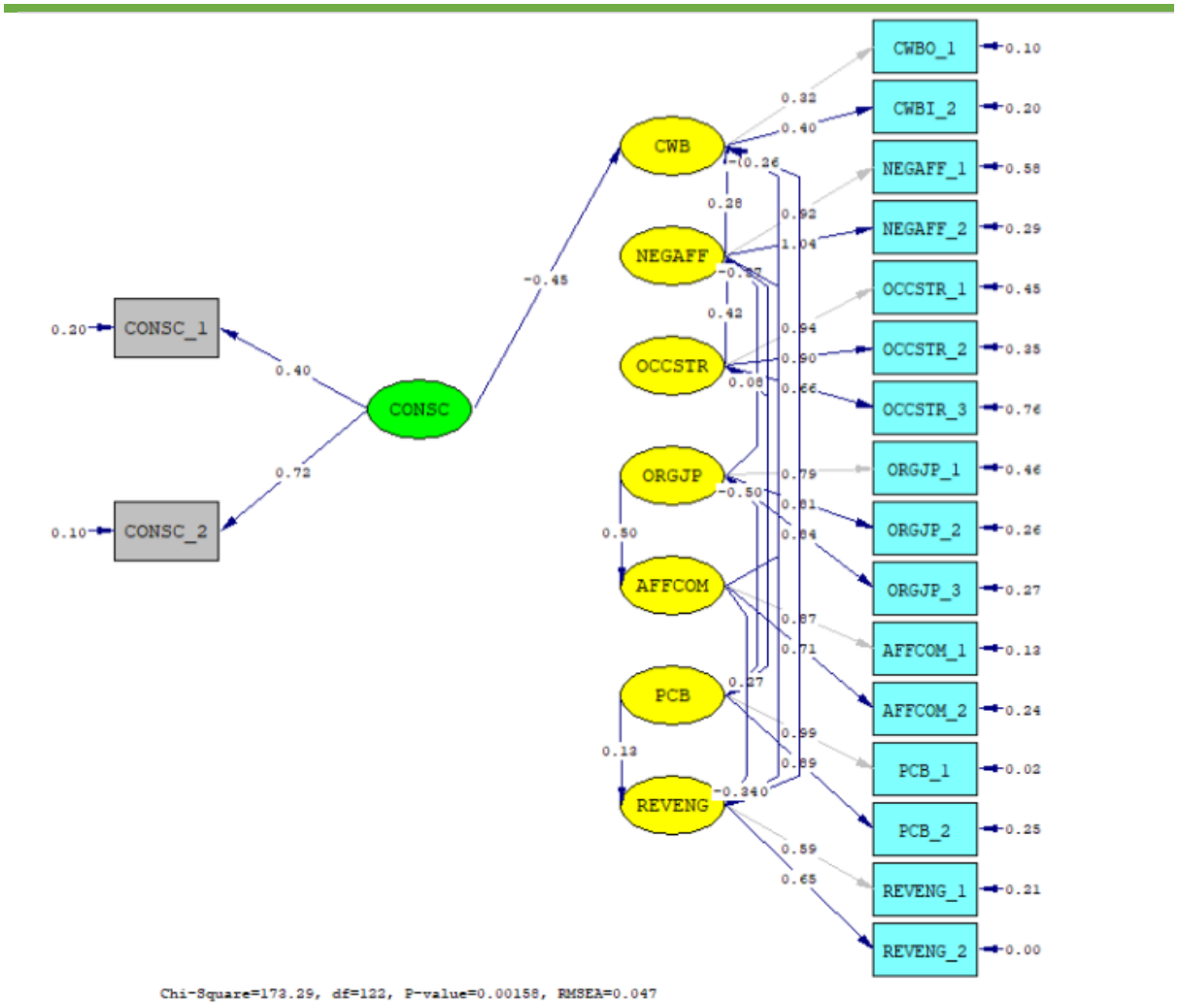


Figure 4.5 Fitted Comprehensive LISREL Structural Model

4.5.2 Standardised residuals

Table 4.12 indicates the summary of the standardised variance-covariance residuals. The results show that there were four values smaller than -258 and five values larger than 2.58. These nine large residuals constituted 5% (5/171 unique elements) of the total number of unique variance and covariance terms in the covariance matrix, which were poorly estimated. As in the measurement model, the percentage was regarded as insignificant to be concerned about, therefore, painting a positive picture of good structural model fit.

Table 4.12

Summary Statistics for the CWB Structural Model Standardised Residuals

Description	Value
Smallest standardised Residual	-4.457
Median Standardised Residual	0.000
Largest Standardised Residual	8.247
Largest Negative Standardised Residuals	
Residual for OCCSTR_1 and NEGAFF_1	-4.457
Residual for AFFCOM_1 and NEGAFF_1	-4.162
Residual for PCB_1 and CWBO_1	-3.993
Residual for CONSC_2 and OCCSTR_2	-2.654
Largest Positive Standardised Residuals	
Residual for OCCSTR_3 and NEGAFF_2	3.311
Residual for AFFCOM_2 and NEGAFF_2	2.610
Residual for AFFCOM_2 and ORGJP_2	3.865
Residual for AFFCOM_2 and ORGJP_3	4.612
Residual for CONSC_1 and NEGAFF_2	8.247

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment: REVENG = Revenge

In order to investigate the standardise residuals in totality, Diamantopoulos and Siguaw (2000) recommend that the stem and leaf plot be interpreted (Figure 4.6).

```
- 4|520
 - 3|
 - 2|74433332110000
 - 1|999876653222221100000
-0|9998776666665544443333332222100000000000000000000000000000000000000
  0|11222222233333334455666666777888889999
  1|002444444567778999
  2|1136
  3|39
  4|6
  5|
  6|
  7|
  8|2
```

Figure 4.6 Stem and Leaf Plot of the Structural Model Standardised Residuals

A closer look at the stem and leaf plot shows that it appears to be slightly positively skewed, indicating an underestimation (by the model parameter estimates) of the observed variance and covariance terms in the observed covariance matrix.

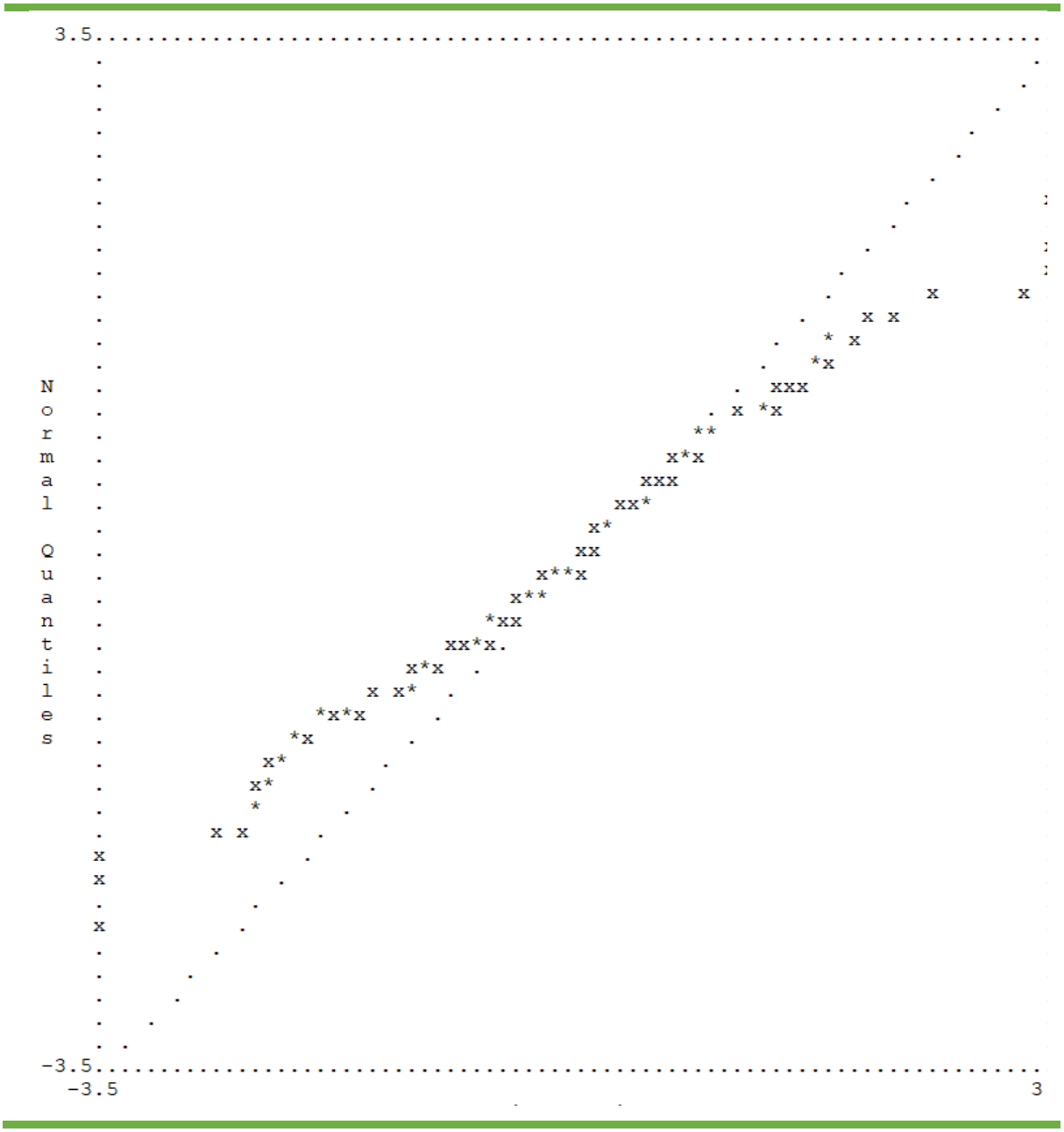


Figure 4.7 Q-Plot for the Structural Model Standardised Residuals

Figure 4.7 presents the Q-plot of the structural model standardised residuals, which were also considered to conclude model fit. The plot shows not a perfect 45-degree reference line, as there is a slight deviate on the upper and lower regions of the X-axis (both positive and negative large residuals), with positive residuals more dominant as indicated in Table 4.12 and Figure 4.6. This was, however, not considered severe enough to be of great concern.

4.5.3 Evaluation of the hypothesised relationships

The purpose of testing/fitting the structural model is to establish if hypothesised theoretical relationships, that is, between the endogenous(η) and exogenous(ξ) variables as indicated in the initial model (Figure 2.1) are supported by data. According to Diamantopoulos and Siguaw (2000) four issues must be considered that are necessary for the evaluation of structural model relations. These are (1) evaluating the signs of the parameters of the paths to check if they are in tandem with the nature and direction (+ or -) of the relationships that were theoretically hypothesised to exist between the different latent variables (2) evaluating the magnitudes of the parameter estimates to determine the strength of the relationship (3) evaluating the significance of the parameter estimates indicated by z values |1.64|. This critical cut-off point was considered since the hypotheses tested were directional in nature. Lastly, an inspection of the squared multiple correlation (R^2) which indicates the amount of variance in each endogenous variable that is explained by other variables causally related to it, was done.

Considering the above, evaluating the structural model in this study, therefore, involved reporting on the freed parameters in the Beta, Gamma, and Psi matrices. Each matrix of these three was interpreted in terms of three important values, namely, *parameter estimates, standard error terms and z values*. These estimates entailed some mean change in an endogenous variable, given one-unit change in corresponding endogenous or exogenous latent variable - when all other variables were fixed.

In line with Diamantopolous and Siguaw (2000) the beta matrix helped in evaluating the structural model in terms of the hypothesised relationships between η-variables, that is, endogenous latent variables. Thus, the strength of the influence of η_j on η_i was first investigated by evaluating the unstandardised beta matrix (Table 4.13) in order to determine the significance of the estimated path coefficients β_{ij}.. The β_{ij} were construed as statistically significant when the corresponding z-value was greater than |1.64| ($p<0.05$) (Diamantopolus & Siguaw, 2000).

Table 4.13

Structural Model Unstandardised Beta Matrix

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
CWB	- -	0.283 (0.106) 2.676	- -	- -	-0.035 (0.089) -0.396	- -	0.260 (0.124) 2.103
NEGAFF	- -	- -	0.419 (0.090 4.667	-0.366 (0.088) -4.168	- -	- -	- -
OCCSTR	- -	- -	- -	- -	- -	0.082 (0.099) 0.826	- -
ORGJP	- -	- -	- -	- -	- -	-0.505 (0.080) -6.280	- -
AFFCOM	- -	- -	- -	0.501 (0.076) 6.590	- -	- -	- -
PCB	- -	0.274 (0.100) 2.745	- -	- -	- -	- -	- -
REVENG	- -	0.202 (0.093) 2.160	- -	- -	-0.338 (0.095) -3.564	0.128 (0.108) 1.193	- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

Table 4.14 shows the completely standardised beta parameter estimates. These estimates were considered as additional on the strength and direction of the hypothesised relationships.

Table 4.14

Structural Model Completely Standardised Beta Matrix

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
CWB	- -	0.283	- -	- -	-0.035	- -	0.260
NEGAFF	- -	- -	0.419	-0.366	- -	- -	- -
OCCSTR	- -	- -	- -	- -	- -	0.082	- -
ORGJP	- -	- -	- -	- -	- -	-0.505	- -
AFFCOM	- -	- -	- -	0.501	- -	- -	- -
PCB	- -	0.274	- -	- -	- -	- -	- -
REVENG	- -	0.202	- -	- -	-0.338	0.128	- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

The results presented in Table 4.14 show that three of the beta freed parameter estimates in the structural model had z-values less than |1.64|, meaning that the three null hypotheses could not be rejected. These were: H_{04}: $\beta_{15} = 0$; H_{06}: $\beta_{36} = 0$; H_{011}: $\beta_{15} = 0$.

The findings in Table 4.13 and 4.14 were interpreted in line with the statistical hypotheses formulated in Chapter 3 (Table 3.2).

Hypothesis 3: Negative affect (η_2) positively affect counterproductive work behaviour(η_1).

The results showed that, as hypothesised, NEGAFF had a significant positive linear relationship with CWB (SEM completely standardised path coefficient =.28). These results confirmed the theorised direction of the hypothesised influence, thus, H_{03}: $\beta_{12} = 0$ was rejected and the alternative hypothesis H_{a3}: $\beta_{12} > 0$ was considered.

Hypothesis 4: Affective commitment (η_5) negatively affect counter-productive work behaviour (η_1).

The results in Tables 4.13 and 4.14 also indicate that the hypothesised path from AFFCOM to CWB was not corroborated by data (SEM completely standardised path coefficient = -.03), and, therefore, contrary to the originally hypothesised relationship. The beta parameter estimate was less than |1.64|. As a result, the null hypotheses, H_{04}: $\beta_{15} = 0$, was not rejected.

Hypothesis 5: Occupational stress (η_3) positively affect negative affect (η_2).

As shown in Tables 4.13 and 4.14, the hypothesised path from OCCSTR to NEGAFF was supported (SEM completely standardised path coefficient = .42). The sign of the parameter estimate corresponds with the direction of the hypothesised path. Thus, it was concluded that occupational stress had a significant positive relationship with negative affect, therefore, H_{05}: $\beta_{23} = 0$ was rejected in favour of H_{a5}: $\beta_{23} > 0$.

Hypothesis 6: Psychological contract breach perceptions(η_6) positively affect occupational stress(η_3).

Tables 4.13 and 4.14 also indicate that the hypothesised path from PCB to OCCSTR was not corroborated by data (SEM completely standardised path coefficient =.08), and, therefore, is contrary to the originally hypothesised relationship. The beta parameter estimate was less than |1.64|, as a result, the null hypotheses, H_{06}: $\beta_{36} = 0$, was not rejected.

Hypothesis 7: Perceptions of psychological contract breach(η_6) negatively affect perceived organisational justice(η_4).

As presented in Tables 4.13 and 4.14, the parameter estimate for the relationship between PCB and ORGJP was significant and in the hypothesised direction (SEM completely standardised path coefficient = -.51). The conclusion, therefore, was that, perceptions of psychological contract breach had a significant negative linear relationship with organisational justice perceptions. As such, the null hypothesis H_{07}: $\beta_{46} = 0$ was rejected in favour of the alterative hypothesis H_{a7}: $\beta_{46} < 0$.

Hypothesis 8: Organisational justice perceptions(η_4) positively affect affective commitment(η_5).

The results in Tables 4.13 and 4.14 confirmed the hypothesised path and direction of the relationship between ORGJP and AFFCOM (SEM completely standardised path coefficient = .50). This means that the hypothesised relationship was corroborated by data. It was, therefore, concluded that, organisational justice perceptions had a significant positive linear relationship with affective commitment, thus, H_{08}: $\beta_{54} = 0$ was rejected in favour of H_{a8}: $\beta_{54} > 0$.

Hypothesis 9: Feelings of retaliation(revenge)(η_7) positively affect counter-productive work behaviour(η_1).

Presented in Tables 4.13 and 4.14 are also the results showing that the parameter estimate for the relationship between REVENG and CWB was significant and in the hypothesised direction (SEM completely standardised path coefficient =.26). This entailed that, the theorised direction was supported by data, and, therefore, it was concluded that the null hypothesis H_{09}: $\beta_{17} = 0$, be rejected and the alternative hypothesis, H_{a9}: $\beta_{17} > 0$, be considered.

Hypothesis 10: Negative affect(η_2) positively affect perceptions of psychological contract breach(η_6)

As indicated in Table 4.13 and 4.14, it was revealed that negative affect had a positive linear relationship with perceptions of psychological contract breach (SEM completely standardised path coefficient = .27). These results corroborate the theorised direction of the hypothesised influence. This led to the rejection of the null hypothesis, H_{010}: $\beta_{62} = 0$ in favour of the alternative hypothesis, H_{a10}: $\beta_{62} > 0$.

Hypotheses 11: Perceptions of psychological contract breach positively affect feelings of revenge.

Tables 4.13 and 4.14 also indicate that the hypothesised path from PCB to REVENG was not corroborated by data (SEM completely standardised path coefficient =.13), and, therefore, contrary to the originally hypothesised relationship. The beta parameter estimate was less than |1.64|, as a result, the null hypotheses, H_{011}: $\beta_{76} = 0$, was not rejected.

The unstandardised gamma matrix was also examined to establish the significance of the estimated path coefficients (γij), expressing the strength of the influence of Ksi (ξj) (exogenous latent variable) on Eta (ηi) (endogenous latent variable). When the z-

values exceed |1.64|, as in Table 4.15, the unstandardised estimates were regarded as statistically significant (p<.05) (Diamantopolous & Siguaw, 2000). In this case, the z-value in the unstandardised gamma matrix (Table 4.15) exceeded the cut-off value and, therefore, was statistically significant.

Table 4.15

Structural Model Unstandardized Gamma Matrix

	CONSC
CWB	-0.452
	(0.127)
	-3.545
NEGAFF	- -
OCCSTR	- -
ORGJP	- -
AFFCOM	- -
REVENG	- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

The completely standardised matrix also provided additional information on the strength of the structural relationships between the Ksi and the Eta as indicated in Table 4.16.

Table 4.16

Structural Model Completely Standardised Gamma Matrix

	CONSC
CWB	-0.452
NEGAFF	- -
OCCSTR	- -
ORGJP	- -
AFFCOM	- -
REVENG	- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; CONSC = Conscientiousness; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

The findings in Table 4.15 and 4.16 were interpreted in line with the statistical hypotheses formulated in Chapter 3 (Table 3.2) as shown below.

Hypothesis 12: Conscientiousness (ξ_1) negatively affect counter-productive work behaviours (η_1).

Tables 4.15 and 4.16 indicate that the hypothesised path from CONSC to CWB was supported. The sign of the parameter estimate corresponded with the direction of the theorised path (SEM path coefficient = -.45). It was, therefore, possible to conclude that conscientiousness had a significant negative linear relationship with counter-productive work behaviour, thus, H_{012}: $\gamma_{11} = 0$ was rejected in favour of H_{a12}: $\gamma_{11} < 0$.

Presented in Tables 4.13 and 4.14 are also results of the *post hoc* analyses done using modification indices to improve the model fit. The analyses justified the inclusion of three additional pathways to the model, which were theoretically sensible. These paths were: Organisational justice perceptions (ORGJP) to Negative affect (NEGAFF); Negative affect (NEGAFF) to revenge (REVENG), and Affective commitment (AFFCOM) to revenge (REVENG); three *post hoc* hypotheses were subsequently formulated and labelled - hypotheses 13, 14 and 15, respectively.

Hypothesis 13 (Post hoc hypothesis 1): Organisational justice perceptions(η_4) negatively affect negative emotions (η_2)

The results as presented in Tables 4.13 and 4.14 clearly show that the parameter estimate for the relationship between ORGJP and NEGAFF was significant and in the hypothesised direction (SEM path coefficient = -.37). The theorised negative direction was supported by data, therefore, the null hypotheses, H_{014}: $\beta_{24} = 0$ was rejected in favour of the alternative hypotheses, H_{a14}: $\beta_{24} < 0$.

Hypothesis 14 (Post hoc hypothesis 2): Negative affect(η_2) positively affect feelings of revenge(η_7)

As portrayed in Tables 4.13 and 4.14, the hypothesised path and direction of the relationship between NEGAFF and REVENG is confirmed (SEM path coefficient = .20). It was concluded that negative affect had a significant linear relationship with feelings of revenge, thus, H_{015}: $\beta_{72} = 0$ was rejected in favour of H_{a15}: $\beta_{72} > 0$.

Hypothesis 15 (Post hoc hypothesis 3): Affective commitment(η_5) negatively affect feelings of revenge(η_7)

As indicated in Tables 4.13 and 4.14, AFFCOM had a significant negative linear relationship with REVENG, with a SEM path coefficient of -.34. This meant that the theorised direction of the influence was corroborated by the results. As such, the null hypothesis H_{016}: $\beta_{75} = 0$ was rejected in favour of H_{a16}: $\beta_{75} > 0$.

To conclude, and, as evidenced by the completely standardised parameter estimates above, the influence of PCB on organisational justice (-.51) was the most salient. This was followed by the influence of ORGJP on affective commitment (.50), then CONSC on counter-productive work behaviour (-.45); OCCSTR on negative affect (-.42); ORGJP on negative affect (-.37); AFFCOM on feelings of retaliation(-.34); NEGAFF on counter-productive work behaviour(.28); NEGAFF on psychological contract breach(.27); REVENG on counter-productive work behaviour(.26), and lastly NEGAFF on feelings of retaliation(.20).

The variances in the structural error terms are presented in the Psi matrices, the unstandardised and the completely standardised. According to Martin (2011) error variance estimates, standard errors and z-values for the residual terms of the structural model, are displayed by the unstandardised psi matrix; while the magnitude of the variance coefficients in the structural error terms are presented in the completely standardised matrix. Both matrices are shown in Tables 4.17 and 4.18.

Table 4.17

Structural Model Unstandardised Psi Matrix

CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
0.583	0.583	0.974	0.673	0.749	0.820	0.746
(0.198)	(0.111)	(0.151)	(0.108)	(0.132)	(0.128)	(0.150)
2.947	5.256	6.428	6.227	5.659	6.424	4.964

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

Table 4.18

Structural Model Completely Standardised Psi Matrix

CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
0.583	0.583	0.974	0.673	0.749	0.820	0.746

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

As shown above, the results show that a statistically significant proportion of the variances in all the endogenous variables could be accounted for by the model since the z-values of the residual terms of the structural model are all above |1.64| The results were noted as indicating that, causes of the ETAs are in the model.

According to Diamantopolous and Siguaw (2000), squared multiple correlations (R^2) indicate the proportion of variance in each endogenous variable that can be explained by the weighted linear composite of effects linked to it in the model. The squared multiple correlations for the endogenous variables are presented in Table 4.19.

Table 4.19

Squared Multiple Correlations for Structural Equations

CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
0.417	0.417	0.026	0.327	0.251	0.180	0.254

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

An examination of the contents in Table 4.19 indicate that all items had R^2 values between 0 and 1(Hair et al., 2018), which suggested that no or little amount of the variance is attributed to random error and non-relevant systematic sources of variance for all endogenous variables and, thus, no threat to reliability and validity could be detected. The fact, however, that 41.7% of variance in CWB and NEGAFF is explained by the model presented some concern but, however, the values are within the acceptable levels.

Modification indices (MI) for beta were examined to check if there was still any other way in which the model could further be improved. They reflect the predicted change in the fit statistics if a currently fixed path is set to zero (0). The critical cut-off value is 6.64. Any MI value larger than 6.64 means there is a statistically significant way of improving a model's fit at 1% (0.01) significance level. The modification indices for beta are shown in Table 4.20.

Table 4.20

Modification Indices for Beta

	CWB	NEGAFF	OCCSTR	ORGJP	AFFCOM	PCB	REVENG
CWB	- -	- -	2.823	2.649	- -	1.792	- -
NEGAFF	0.292	- -	- -	- -	9.501	0.010	39.996
OCCSTR	1.591	0.078	- -	0.289	0.350	- -	3.590
ORGJP	0.960	0.100	0.256	- -	0.480	- -	0.991
AFFCOM	11.288	7.506	0.260	- -	- -	1.382	6.596
PCB	1.912	- -	- -	0.005	0.150	- -	- -
REVENG	- -	- -	5.737	3.948	- -	- -	- -

Note: OCCSTR = Occupational stress; NEGAFF = Negative affect; PCB = Psychological contract breach; CWB = counterproductive work behaviour; ORGJP = Organisational justice perceptions; AFFCOM = Affective commitment; REVENG = Revenge

An inspection of the modification indices in Table 4.20 indicated that the only two paths with larger than 6.64 modification indices were between NEGAFF and AFFCOM (MI = 7.506) and between AFFCOM and NEGAFF (MI = 9.501). These were deemed as not making any substantive theoretical sense and, therefore, not considered as possible modifications to the model.

Figure 4.8 presents the parameter estimates of all the hypothesised paths in the modified structural model (Figure 4.4) which were fitted to the data. Out of the 13 hypothesised paths in the modified model, ten were significant, and these are indicated in blue and green colours. In total, the study had 15 hypotheses (including two *post hoc* ones), of which ($H_{01}$and H_{02}) were for the exact and close fit null hypotheses for the measurement and structural models, respectively, thus, 13

hypotheses (H_{03} - H_{015}) reflected the beta and gamma path specific hypotheses in the final modified model.

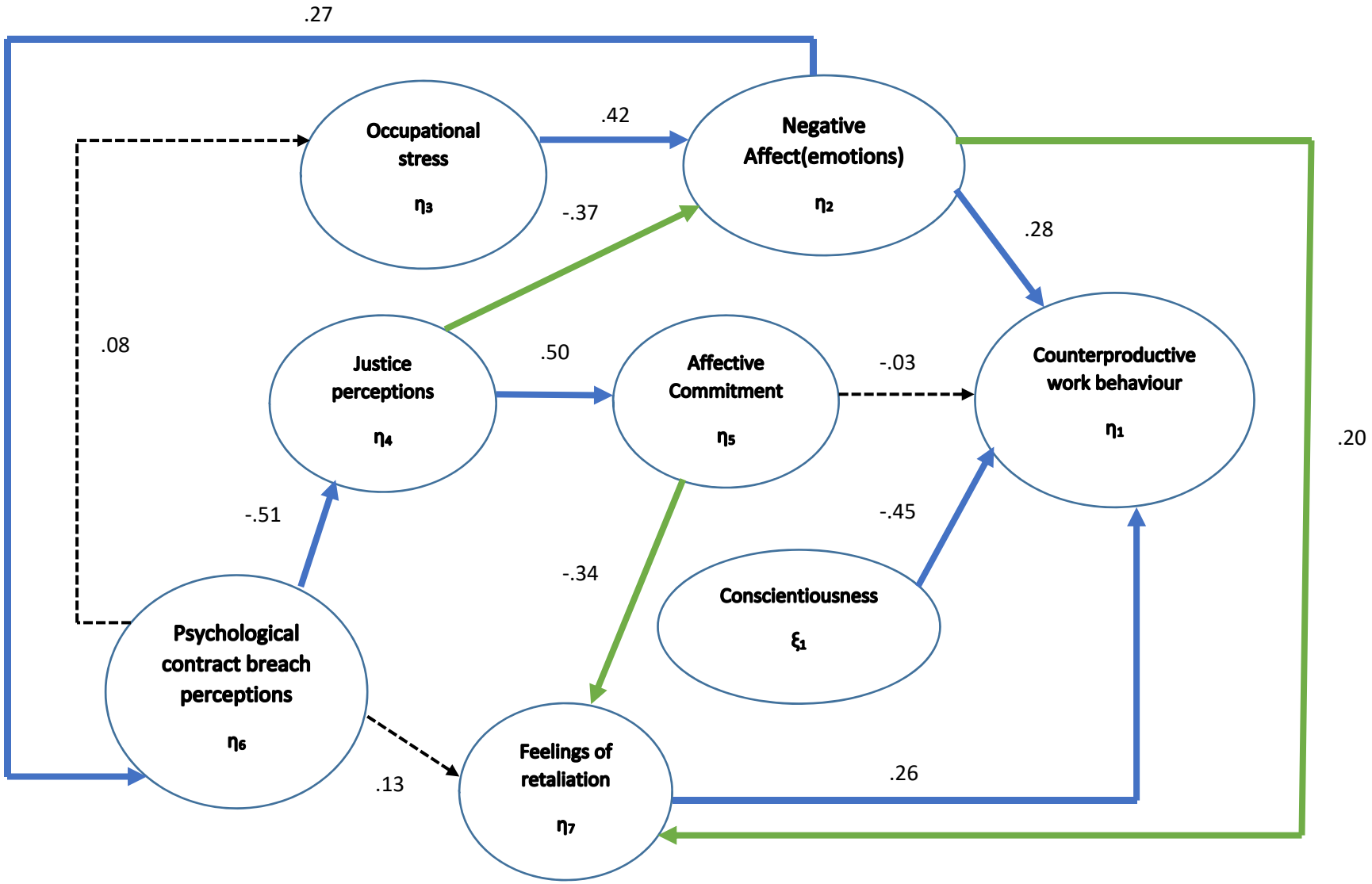


Figure 4.8 Results of the Modified Structural Model

Note: (1) Values between latent variables are standardised regression coefficients (2) Non-significant linkages are represented by dotted lines (3) Green linkages indicate added pathways after post hoc analysis.

4.6. Summary

The current chapter presented the results pertaining to the measurement and structural model fit. The next chapter, which is the final one, discusses the results, specifically focusing on the modified structural model. Recommendations, limitations and future research directions will also be considered.

CHAPTER 5

DISCUSSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

5.1 Introduction

Research shows that counter-productive work behaviour among academics is prevalent in public higher education institutions in South Africa (Kekana, 2015; Tau, 2017) and is detrimental to, among many other effects, institutions' revenues and reputations. This evidence points to the need to investigate the antecedents of such behaviour among academics in the country. The benefits of such an investigation include the opportunity for institutions to design appropriate interventions in areas, such as recruitment, selection and talent management which have been found to reduce counter-productive work behaviour (Martinko et al., 2002). Despite this evidence, there seem to be a dearth of research on reasons behind the prevalence of counter-productive work behaviour among academics in the country.

To cover the research gap, the present study propounded that, despite numerous previous studies investigating personal and organisational antecedents of counter-productive work behaviour, none of them has given attention to psychological contract breach as a main underlying cause of counter-productive work behaviour- worse, among academics within the South African context. The choice of psychological contract breach was premised on the fluidity of the higher education sector in South Africa, which is continuously transforming and putting demands on academics. Such demands, it is argued, might be responsible for perceptions of break down in trust between academics and their employers, triggering numerous other reactions and, eventually resulting in counter-pointe work behaviour by academics.

Based on the above context, the present study's initiating question focused on the variance in counter-productive work behaviour among academics in selected South Africa higher education institutions. This was done by examining different individual and organisational factors, with specific emphasis on the influence of perceived psychological contract breach on counter-productive work behaviour. The main objective of the study was to examine sources and the psychological mechanisms that might explain why academics engage in counterproductive work behaviours, with emphasis on psychological contract breach perceptions' direct and indirect influence

on variables that constituted what was labelled - the revenge route' (feelings of retaliation); injustice route (justice perceptions, and affective commitment), and the stress reaction route (occupational stress and negative affect). Conscientiousness was included in the model as having a stand lone direct influence on counter-productive work behaviour - not necessarily influenced by psychological contract breach perceptions.

Chapter 2 reviewed relevant literature for the study, focusing on theorising, through arguments and counter-arguments, possible answers to the research initiating question. The systematic arguments and theorising culminated in the development of a conceptual model (Figure 2.1) - which was regarded as a tentative answer to the research's initiating question. The next chapter, 3, discussed the methodological approaches followed to empirically test the conceptual model – and these included SEM on the modified structural model. Chapter 4 focused on presenting the results which were obtained after several statistical analyses were performed to evaluate the final modified model.

This current chapter concludes the study by discussing the results, inferring using relevant literature, the extent to which they confirm or disconfirm the credibility of the theorisation done on the psychological processes underlying counterproductive work behaviour among academics. Finally, some recommendations to reduce counterproductive work behaviour among academics, limitations of the study as well the results' practical implications are proffered.

5.2 Results

The various statistical analyses performed to evaluate or test the theorised conceptual model as well as the subsequent results have been presented in Chapter 4. The next section presents summarised results of the measurement and structural model fit, followed by discussion of the results.

5.2.1 Evaluation of the CWB measurement model results

The goodness-of-fit statistics, that is, Satorra-Bentler chi square and RMSEA showed that the model obtained good fit. All the 18 indicator variables loaded significantly ($p < .05$) on the corresponding latent variables they were meant to reflect as indicated by high lambda-X parameter estimates, except for the third item parcel (OCCSTR_3) of

the occupational stress latent variable. The other two parcels of the occupational stress latent variable were relatively high on the latent variable, hence, the below cut-off point value for the OCCSTR_3 might not have influenced the measurement model fit and the modified structural model results per se, and, therefore, was considered not a threat. The R^2 values were very high also indicating no threat to issues of reliability and validity, thus, generally, it was concluded that most of the indicator variables produced admissible values which showed that they (indicator item parcels) reflected the latent variables they were meant to represent. This rendered their operationalisation reasonably successful.

Based on the preceding statistical reports, the measurement model was deemed to have a good fit, therefore, allowing the researcher to proceed and test the structural model via SEM.

5.2.2 Evaluation of the CWB modified structural model results

The presented goodness-of-fit statistics, that is, Satorra-Bentler chi square and RMSEA, indicated that the modified structural model achieved good fit. An evaluation of the beta matrix indicated that all nine of the 12 hypothesised relationships between the endogenous latent variables were statistically significant ($p < .05$). This means that, support was obtained for the influence of NEGAFF on counterproductive work behaviour, OCCSTR on negative affect, PCB on occupational stress, PCB on organisational justice perceptions, ORGJP on affective commitment, REVENG on counterproductive work behaviour, NEGAFF on psychological contract breach, ORGJP on negative affect, NEGAFF on revenge, and AFCOM on revenge. The influence of AFFCOM on counterproductive work behaviour was not supported, the same as PCB on occupational stress, and PCB on revenge. The lack of support, for example, the PCB and occupational stress could be attributed to lack of reflection of OCCSTR_3 on occupational stress construct as presented above.

In terms of the gamma matrix, the only hypothesised relationship in the model, between CONSC as an exogenous variable and counter-productive work behaviour as an indigenous variable was statistically significant ($p<.05$). The support that conscientiousness had a negative influence on counterproductive work behaviour was confirmed and concluded.

The results further showed that the structural model explained 41.7% of the variance in CWB (Table 4.19). The model presented a somewhat satisfying to good attempt to explain the latent variable of interest. This was corroborated by the lack of any further theoretically sensible relationship that could be obtained between the latent variables with the highest modification indices values as shown in Table 4.20. This means no further improvement in the model could be explored.

5.2.3 Interpretation/assessment of model hypotheses

As previously noted, the reported widespread incidences of counter-productive work behaviour among academics in South Africa (De Jager & Brown, 2010; Peterson & Subroyen, 2017; Vazquez, 2018) and the fact that previous studies ignored the notion of psychological contract breach generated interest in studying antecedents of counter-productive work behaviour among academics, with the assumption that invaluable insights might ensue. As such, the various individual and organisational factors were suggested as linked to each other, serving to lower or heighten the occurrence of counterproductive work behaviour among academics.

From the onset of the study, it was hypothesised that counter-productive work behaviour would be indirectly influenced by perceptions of psychological contract breach, through a set of other linked variables to justice, stress and retaliation feelings. The support for this proposition was obtained from the results of nine of the 15 hypotheses.

To begin with, the positive relationship between negative emotions and counter-productive work behaviours (H_{03}) was found to be statistically significant with a path coefficient of .28. This result is supported by the Conservation of Resource Theory (Bolton et al., 2012) which argues that negative emotions deplete individuals' valuable resources and makes them use remaining resources sparingly by behaving in certain detrimental ways, such as withdrawing from the situation (for example, absenteeism) to prevent further loss.

Affective commitment was not statistically related to counter-productive work behaviour as hypothesised (H_{04}). The path coefficient (-.03) confirmed this result. The study argued that when employees feel detached from their organisation they are more likely to engage in unproductive behaviours. No empirical evidence for this relationship was obtained from the data.

Regarding the positive hypothesised relationship between occupational stress and negative affect(H_{05}), results supported it, with a path coefficient .42. Corroboration for this finding is provided by Fida et al. (2015) who pointed out that work stressors are associated with the development of negative emotions. Similarly, Falco et al. (2013) reported that psychological strain can be predicted from negative affect and conflict with co-workers.

No statistically significant relationship was found between psychological contract breach and occupational stress (H_{06}). The argument that was put forward during the theorisation was that when academic employees perceive psychological contract breach, perceived threat to job security and well-being are experienced, leading to stress-like symptoms (Duran et al., 2018), however, with a coefficient path value of .08, this hypothesis was not supported.

Psychological contract breach perceptions were presented as negatively influencing organisational justice (H_{07}) and the result supported this hypothesis because corresponding path coefficient was -.51. Previous studies have found an association between perceived psychological contract breach and procedural justice perceptions (Rosen et al., 2009).

Organisational justice perceptions emerged as a statistical predictor of affective commitment (H_{08}). This is in tandem with the theoretical arguments provided in literature which state that, when an organisation treats its employees in a positive and fair manner, the results are that employees tend to feel psychologically and emotionally attached to the organisation (Allen & Meyer, 1996). Other empirical evidence showed that fair and favourable outcomes influence an individual's attachment (affective commitment) to an organisation (Purang, 2011). The current result supported this hypothesis with a path coefficient of .50.

A statistically significant relationship was found between feelings of retaliation or revenge and counter-productive work behaviour (H_{09}), with a path coefficient of .26. Confirming this result is the finding by Bradfield and Karl (1999) that retaliatory cognitions within the work context are a pre-condition for some motivational intent which come before the enactment of some harmful behaviours. Previous other studies in line with the result (Terris & Jones, 1982) had shown that revenge feelings were a

pre-condition for employees' involvement in anti-social behaviours such as theft, harassment and insubordination.

The theorisation also hypothesised that negative affect positively influences psychological contract breach (H_{010}). The result showed a path coefficient value of .27, indicating a statistical significance between the two latent variables. It was argued that, when academic employees develop negative emotions, these emotions are likely to influence their interpretations of organisational experiences that threaten the psychological contract evaluations. This argument is corroborated by the Affect Infusion Theory (Forgas, 2008) which argues that negative affect as a 'piece of information' can exert influence on judgemental process, thus, is used by employees to reflect on organisational events and come to conclusion that their psychological contract has been breached.

When psychological contract breach and feelings of retaliations were considered, it was hypothesised that psychological contract breach positively influences feelings of retaliation (H_{011}). The proposed argument was that when academics perceive breach of trust between them and their employer, they build anger and emotions associated with revenger ideations (Restubog et al., 2015), however, no empirical data could substantiate this claim – with a path coefficient value of .13.

The only exogenous latent variable in the study (i.e. conscientiousness) was hypothesised as having a negative relationship with counterproductive work behaviour (H_{012}). With a path coefficient value of -.45, the hypothesis was supported. The study argued that academics with high levels of conscientiousness are less likely to engage in counterproductive work behaviour than those with low levels. Support for the argument came from Bolton et al. (2012) who found that low conscientiousness predicts counter-productive work behaviour, while the Conservation of Resources Theory (Penny et al., 2011) on the other hand states that highly conscientious employees are more likely to properly deploy their resources to restraining themselves from engaging in behaviours that do not meet their own career or organisational goals.

The three additional pathways added to improve model fitness were also evaluated. Organisational justice perceptions were hypothesised as having a negative influence on negative emotions (post hoc hypothesis 1) (H_{013}). The results were statistically significant, with a path coefficient value of -.37. Thus, employees who perceive low

justice are likely to experience negative emotions. Khan *et al.* (2013) support this finding by proposing that, either distributive injustice and/or procedural injustice perceptions, in relation to, for example, a pay-raise decision, may act as a personal slight, insult and threat to ego identity, and as a source of information for making blame attributions regarding this unfairness. As such, distributive injustice and/or procedural injustice, regarding a pay-raise decision, could predict an anger or sadness emotional responses. Similarly, this result is corroborated by Van den Bos and Miedema (2000) who found that when participants were denied the opportunity to voice their opinions (procedural injustice) they experienced negative emotions like anger and resentment.

The relationship between negative affect and feelings of retaliation (post hoc hypothesis 2) (H_{014}) was hypothesised as statistically positive, arguing that employees' negative emotions like anger, sadness, and resentment (triggered by certain events in the organisation) are likely to invoke feelings of retaliation towards the employer. The path coefficient value of .20 supported the hypothesis, with previous studies (Barber et al., 2005) providing further support when they found that anger (as a form of negative affect) is most strongly associated with the urge for revenge. In concurrence, a study investigating the action or tendencies associated with various emotions (including fear, sadness, and anger) by Roseman, Wiest, and Swartz (1994) found that participants were likely to report wanting to hurt someone when they recall an experience that made them angry.

The final hypothesis (*post hoc* hypothesis 3) included in the model (H_{015}) was on the statistically significant negative relationship between affective commitment and feelings of retaliation (path coefficient of -.34). The study argued that academics low in affective commitment are more likely to engage in retaliatory behaviours. According to Meyer and Maltin (2010) affective commitment tends to show negative relationships with emotions of revenge or retaliation at work. Similarly, Dos Santos (2013) reported that affective commitment shows significant negative relationships with emotional dissonance that is associated with feelings of hurt and the requirement to express negative emotions. Therefore, although support was not found for the direct effect of affective commitment on counterproductive work behaviour, it was found that affective commitment has a statistical negative effect on feelings of retaliation, which in turn influences counterproductive behaviour.

5.3 Limitations of the study

Even though some of the methodological limitations have been discussed throughout the text, some more will be highlighted again. To begin with, the study was conducted among academics at selected higher learning institutions in South Africa, rendering the results not generalisable to a broader population of academics without further modifications. The sample used was from the three universities and, therefore, cannot be said to be representing the broader multicultural society of South Africa. In addition, the use of non-probability sampling procedure, although it was the best, concluding that the sample represented a bigger population group cannot be attested with confidence.

The second limitation of the study relates to the use of self-report instruments which, according to Soubelet and Salthouse (2011) run the risk of social desirability - where respondents try to provide answers to create a more favourable impression to the researcher. Such impressions have an impact on the reported level of the construct measured, thereby influencing the results (Elmes et al., 2003). For example, a person might rate themselves higher or lower on items, yet, this might be different from their actual behaviour or belief. Social desirability might have been prevalent in the present study because of the nature of the main variable of interest, that is, counter-productive work behaviour. Academics might have tried to create more favourable impression in order to appear as if they are not doing any harm to the organisation or co-workers in the same organisation.

Thirdly, certain original sub-scales of some measures in the instrument, for example, the subscale CWBO had few (two) items and doing item analysis was problematic. Fourthly, the sample size, 188 responses, although largely acceptable, was not large enough to produce reliable estimates according to Hair *et al.* (2018). The authors note that sample sizes of more than 200 subjects are regarded as satisfactory for the purpose of doing SEM. Considering these guidelines, the sample size in this study could be taken as a limitation.

Fifthly, previous researches on counterproductive work behaviour have always included Conscientiousness as a ‘moderating variable’. In the interest of time, however, the present study ignored this and treated it as an exogenous latent variable with not a moderating but direct effect.

The sixth point is that, in SEM, when a good model fit is obtained, it does not necessarily mean that there is causality between the hypothesised latent variables comprising the model. Some researchers (Bollen, 1989) argue that, even with good model fit and statistically significant model fit and path coefficients, it is not enough to conclude that there are causal linkages between the latent variable. According to Kerlinger and Lee (2000), the lack of attributing causality is caused by using *ex post facto* designs which do not allow experimental manipulation of the exogenous and endogenous variables - a situation that the current study found itself in. Finally, the validity of the OCCSTR_3 (*Unclear objectives*) composite indicator variable was low and this was of some concern.

5.4 Suggestions for future research

Future research could consider expanding the model by examining the concept of counter-productive work behaviour and incorporate the issue of job security- which has been reported in the literature (Dhanpat & Ngobeni, 2019) as an outcome of psychological contract breach. In addition, the inclusion of moderating variables in the model could add value to literature on the antecedents of counter-productive work behaviour. For example, constructs such as self-control, ethical climate and conscientiousness could be added to the model as moderators. Conscientiousness has always been included as a moderator in previous studies on counter-productive work behaviour (Costa & McCrae, 1992).

South African higher education institutions are multicultural in nature. Future research could use a much larger sample that includes all the twenty-six universities in the country to be able to generalise the results. Alternatively, a multi-group comparison of Universities Technology (UoTs) and Traditional Universities (TUs) in South Africa might be worth doing to validate the model. It would be vital to ensure that both the measurement and structural models fit equally when comparing the two types of universities. This multiple group comparison would allow the researcher to compare two or more groups using the same measurement instrument or multiple population groups.

Lastly, the OCCSTR_3 composite indicate variable had inadmissible value. Future research might want to replicate the same study, or conduct a different one, but use a

different measure of organisations' stress that might have items applicable to the sample used.

5.5 Practical implications of findings

To recap, through focusing on perceived psychological contract breaches, this study examined the sources and psychological mechanisms aimed at explaining why academics engage in counter-productive work behaviours, among three selected institutions of higher learning in South Africa. The higher education sector in South Africa is faced with counter-productive work behaviour among academics (Vazquez, 2018; De Jager & Brown, 2010). Unravelling antecedents of counterproductive work behaviour among academics would be beneficial for institutions of higher learning in the country. This section will proffer some possible managerial implications based on the results of the current study.

The fact that psychological contract breach negatively influences justice perceptions calls for higher education institutions to ensure that the climate for academic work is fair and just, in view of the continuous transformation taking place in the sector. This might prevent the erosion of trust between academic employees and institutional management - leading to acts of sabotage or acting in violation of organisational rules and regulations.

The results confirmed that justice perceptions is negatively related to negative affect, and positively related to affective commitment. Therefore, fairness in activities that affect academics, such as promotion and task allocations within institutions should be a priority, as any perceived injustice has ramifications for academics' emotional states, such as anger and sadness as well as their willingness to exert little effort on behalf of their institutions.

Rarely are institutions of higher learning always concerned about the personality of general academic population, for example, during recruitment. The fact that conscientiousness negatively influence counter-productive work behaviour should be taken as call for higher education institutions' management to always include the personality testing in recruitment. This will help proper academic profiling and predict possible deviant behaviour.

Lastly, in the absence of research that has been conducted on the extent to which academic stress influences counter-productive work behaviour within the South African context, the significant influence of occupational stress on negative affect signals the need for institutional managers to create academic stress-free environments, for example, through the promotion of academic freedoms - to avoid academics' anger, sadness and resentment – predictors of revenge and counter-productive work behaviours (Bolton et al., 2012).

5.6 Conclusion

Significant relationships were found between: *Negative affec*t and *counterproductive work behaviour*, *occupational stress* and *negative affect*, *Psychological contract breach* and *occupational stress*, *Psychological contract breach* and *organisational justice perceptions*, *Organisational justice perceptions* and *affective commitment*, *Feelings of retaliation (revenge)* and *counter-productive work behaviour*, *Negative affect* and *psychological contract breach*, *Organisational justice perceptions* and *negative affect*, *Negative affect* and *revenge*, and Affective commitment *and* revenge. The influence of *Affective commitment* on *counter-productive work behaviour* was not supported, same as *Psychological contract breach* on *occupational stress*, and *Psychological contract breach* on revenge.

The fit of the measurement and structural models were both good. Both models also showed close fit. The discriminant validity of each item parcel was ascertained. The limitations and future research direction have been presented. Finally, the study is the first of its kind to investigate counter-productive work behaviour among academics, predicated by perceived psychological contract breach within the South African context. The results of the study should, hopefully, provide higher education institutions in South Africa with insights on how to avoid counterproductive work behaviour among academic employees.

REFERENCES

Aguado, A. R. J. (2017). *The role of perceived organisational support to organisational commitment and counterproductive work behavio*ur. Paper presented at the DLSU Research Congress 2017, De La Salle University, Manilla, Philippines.

Akers, R. L. (2013). *Criminology theories*. *Introduction and evaluation*. New York; Routledge.

Allen, N. J., & Meyer, J. P. (1996). Affective, continuance, and normative commitment to the organization: An examination of construct validity. *Journal of Vocational Behaviour*, 49, 252–276.

Alvino, L. (2014). Engage your employees or lose billions. *Forbes Magazine*. Retrieved from:http://www.forbes.com/sites/womensmedia/2014/09/29/engage-your-employ-ees-or-lose-billions/ on May 23, 2018.

Ambrose, M. L., Seabright, M. A., & Schminke, M. (2002). Sabotage in the workplace: The role of organizational injustice. *Organizational Behaviour and Human Decision Processes*, 89 (1), 947-965.

Aquino, K., Grover, S. L.,Bradfield, M., &Allen, D. (1999). The effects of negative affectivity hierarchical status, and self-determination on workplace victimisation, *The Academy of Management Journal*, 42(3), 260-272.

Babbie, E. (2007). *The practice of social research* (7th edn.). Belmont, CA: Thompson Wadsworth.

Balassiano, M., & Salles, D. (2012). Perceptions of equity and justice and their implications on affective organizational commitment: a confirmatory study in a Teaching and Research Institute. *Brazilian Administration Review*, 9(3), 268-286.

Bandalos, D. L. (2002). The effects of item parcelling on goodness-of-fit and parameter estimate bias in structural equation modelling, *Structural Equation Modelling*, 9, 78–102

Bansal, H. S., Irving, G. P., & Taylor, S. F. (2004). A three-component model of customer commitment to service providers. *Journal of the Academy of Marketing Science*, 32(3), 234−250.

Barrick, M. R., Mount, M. K., & Judge, T. A. (2003). Personality and performance at the beginning of the millennium: What do we now and where do we go next? *International Journal of Selection and Assessment*, 9, 9-30.

Basran, S. (2012). *Employee Views of Ethics at Work: 2012 Continental Europe Survey*. (IBE report) Retrieved from: www.ibe.org.uk/userfiles/gbethicsatwork2012.pdf. on May 17, 2018

Beauregard, T. A. (2014). Fairness perceptions of work-life balance initiatives: effects of counterproductive work behaviour. *British Journal of Management,* 25(4), 772-798.

Bennet, R. J., & Robinson, S. L. (2000). Development of a measure of workplace deviance. *Journal of Applied Psychology*, 85(50, 349-360.

Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software.

Bentler, P. M., & Chou, Chih-Ping. (1987). Practical issues in structural equation modelling. *Sociological Methods & Research* 16(1), 78-92.

Berry, M., Ones, D. S., & Sackett, P. R. (2007). Interpersonal deviance, organisational deviance and their common correlates: A review and meta-analysis. *Journal of Applied Psychology*, 9(22). 410-424.

Bies, R.J., Tripp, T.M., & Kramer, R.M. (1997). At the breaking point: Cognitive and social dynamics of revenge in organizations. In R.A. Giacalone & J. Greenberg (Eds.), *Antisocial behaviour in organizations* (pp. 18–36). Thousand Oaks, CA: Sage

Bless, C., Higson-Smith, C., & Sithole, S. L. (2016). *Fundamentals of social research*

methods. An African perspective (5th ed.). Claremont, Cape Town: Juta.

Blumberg, B., Cooper, D. R., & Schindler, P. s. (2008). *Business research methods* (2nd edn.). London: McGraw Hill.

Bollen K. A. (1989). *Structural equations with latent variables*. New York: Wiley.

Bolton, L. R. Harvey, R., Grawitch, M. J., & Barber, L. K. (2012). Counterproductive work behaviours in response to emotional exhaustion: A moderated mediational approach. *Stress and Health,* 2893), 222-33.

Boomsma A. (1985). Robustness of LISREL against small sample sizes in factor analysis models. In: Joreskog KG, Wold H, editors. *Systems under indirection observation: Causality, structure, prediction (P*art I) (pp.149-173). Amsterdam, Netherlands: North Holland.

Bordia, P., Restubog, S.L.D., & Tang, R. L. (2008). When employees strike back: Investigating mediating mechanisms between psychological contract breach and workplace deviance. *Journal of Applied Psychology,* 93(5), 1104–1117.

Bowling, N. A., Burns, G. N., Stewart, S. M., & Gruys, M. L. (2011). Conscientiousness and agreeableness as moderators of the relationship between neuroticism and counterproductive work behaviours; A constructive replication. *International Journal of Selection and Assessment,* 19(3), 320-330.

Bowling, N.A., & Gruys, M.L. (2010) Overlooked issues in the conceptualization and measurement of counterproductive work behaviour. *Human Resource Management Review*, 20, 54-61.

Bradfield, M., & aquino, K. (1999). The effects of blame attributes and offender likableness on forgiveness and revenge in the workplace, *Journal of Management*, 25(5), 607-631.

Bradfield, M., & Karl, A. (1999). The effects of blame attributions and offender likableness on forgiveness and revenge in the workplace. *Journal of Management, 25*(5), 607-631.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen and J. S. Long (eds.), Testing structural equation models (pp. 136-162). Newbury Park, CA: Sage.

Bryman, A., & Bell, E. (2014). *Research methodology: business and management contexts*. Cape Town: Oxford University Press.

Brynard, D. J. Hanekom, S. X., & Brynard, P. A. (2016). *Introduction to research* (3rd ed.). Pretoria: Van Schaik.

Burger, R. (2012). *Modification, elaboration and empirical evaluation for the De Goede learning potential structural mode*l. Unpublished master's thesis. University of Stellenbosch, Stellenbosch.

Charalampi, A., Michalopoulou, A., & Robinson, C. (2018). Validation of the 2012 European Social Survey Measurement of wellbeing in seventeen European countries, *Applied Research in Quality of Life*, 15, 730105.

Chen, P. Y., & Spector, P. E. (1992). Relationships of work stressors with aggression, withdrawal, theft and substance use: An exploratory study. *Journal of Occupational and Organisational Psychology, 65*(3), 177-184.

Chernyak-Hai, L., & Tziner, A. (2014). Relationships between counterproductive work behaviour, perceived justice and climate, occupational status, and leader-member-exchange. *Journal of Work and Psychology*, 30, 1-2.

Ching, G. S., Tsay, W., Hu. Y., &Hung, C. (2017). Counterproductive work behaviours within academic institutions: A myth or a reality. *International Journal of Research Studies in Psychology*, 6(1), 1-14.

Comrey, A., & Lee, H. (1992). *A first course in factor analysis*. Hillsdale, NJ: Erlbaum.

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd edn.), New York: Academic Press.

Cohen-Charash, Y., & Spector, P. (2001). The role of justice in organizations: A meta-

analysis. *Organizational Behaviour and Human Decision Processes, 6*, 278-321.

Colbert, A. E., Mount, M. K., Harter, J. K., Witt, L. A., & Barrick, M. R. (2004). Interactive effects of personality and perceptions of the work situation on workplace deviance. *Journal of Applied Psychology*, 89(4), 599-609.

Colquitt, J. A. (2001). On the dimensionality of organisational justices: A construct validation measure. J*ournal of Applied Psychology, 86,* 386-400.

Colquitt, J.A., Conlon, D.E., Wesson, M.J., Porter, C.O.L., & Yee, N.G. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86, 425-445

Cropanzano, R., & Mitchell, M. S. (2005). Social Exchange Theory: An interdisciplinary review. *Journal of Management*, 31(6), 874-900.

Costa, P. T. Jr., & McCrae, R. M. (1992). *Revised NEO Personality Inventory (NEO PI R) and NEO Five Factor Inventory (NEO-FFI) Professional Manual*. Odessa, FL: Psychological Assessment Resources Inc.

Dalal, R. S. (2005). A meta-analysis of the relationship between organizational citizenship behaviour and counterproductive work behaviour. *Journal of Applied Psychology, 90*(6, :1241-55.

Davey, A., & Salva, J. (2009), *Statistical power analysis with missing data.* London: Psychology Press.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35, 982–1003.

Dawson, C. (2006). *A practical guide to research methods* (2nd edn.). Oxford: How to Books.

De Jager, K., & Brown, C. (2010). The tangled web: investigating academics' views of

plagiarism at the University of Cape Town. *Studies in Higher Education*, *35*(5): 513-528.

Denscombe, M. 2007). *The good research guide for small-scale special research projects* (3rd edn.). Berkshire: Open University Press.

Dhanpat, N., Ngobeni, N. (2019). Psychological contract and job security among call centre agents: preliminary evidence. *Journal of Psychology in Africa*, 29, 73-79.

Diamantopoulos, A., & Siguaw, J. A. (2000). *Introduction to LISREL. A guide for the uninitiated.* Los Angeles: Sage.

Dinner, E. D., & Emmons, R. (1984). The independence of positive and affect. *Journal of Personality and Social Psychology, 47*(5):1105-17.

Dolan, C., van der Sluis, S., & Grasman, R. (2005). A note on normal theory power calculation in SEM with data missing completely at random. *Structural Equation Modelling: A Multidisciplinary Journal,* 12(2), 245-262.

Do Santos, A. M. E. (2013). Study of the relationships between relational job characteristics, emotion work and affective organizational commitment in a sample of Portuguese hospital nurses. Retrieved from: https://pdfs.semanticscholar.org/996d/170dc6fc01edff9d28dd9c51c48535da8bad.pdf on 14 October 2019.

Du Plooy- Cilliers, F., Davis, C., & Bezuidenhout, R. (2016). *Research matters*. Claremont: Juta.

Dunn, J., & Schweitzer, M. E. (2005). Why good employees make unethical decisions: The role of reward systems, organisational culture, and managerial oversight. In R. e. Kidwell, jr & C. L. Martin (eds.), *Managing organisational deviance*, (pp. 39-60). Thousand Oaks, CA: SAGE.

Duran, F., Woodhams, J., & Bishopp, D. (2018). *An interview study of experiences of*

*firefighters in regard to psychological contract and stressors. Employee response right*s. Retrieved from: https://doi.org/10.1007/s10672-018-9314-z. on May 12, 2018.

Elmes, D. G., Kantowitz, B. H., & Roediger, H. L. (2003). *Research methods in psychology*. (7th edn.). Belmont, CA: Wadsworth.

Elsbach, K.D., & Bhattacharya, C.B. (2001) Defining who you are by what you're not: Organizational misidentification and the National Rifle Association. *Organization Scienc*e, 12, 393-413.

Eschleman, K. J., Bowling, N. A., & LaHuis, D. (2015). The moderating effects of personality on the relationship between change in work stressors and change in counterproductive work behaviours. *Journal of Occupational and Organisational Psychology,* 88, 656-678.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 3*(4), 272-299.

Falco, A., Girardi, D., Marcuzzo, G., De Carlo, A. & Bartolucci, G. B. (2013. Work stress and negative affectivity: a multi-method study. *Occupational Medicine*, 63(5), 341-347.

Fida, R., Paciello, M., Tamontamo, C., Fontaine, R. G., Bararanelli, C., & Farnese, M. L. (2015). An integrative approach to understanding counterproductive work behaviour: The roles of stressors, negative emotions and moral disengagement. *Journal of Business Ethics*, 130, 131-144.

Field, A. (2005). *Discovering statistics using SPSS*. (2nd edn.). London: Sage

Flora, D. B., & Flake, J. K. (2017). The purpose and practice of exploratory and confirmatory factor analysis in psychological research: Decisions for scale development and validation. *Canadian Journal of Behavioural Sciences*, 49(2), 78-88.

Folger, R., & Skarlicki, D. P. (1998). A popcorn metaphor for employee aggression. In R. W. Griffin, A. O'Leary-Kelly and J. M. Collins (eds.). *Dysfunctional Behaviour in Organisations: Violent and deviant behaviour.* (pp. 340-4570. Stanford, CT: JAI Press.

Forgas J. P. (2008). Affect and Cognition. *Perspectives in Psychological Sciences,* 3, 94–101.

Forgas, J, P. (1994). The role of emotion in social judgments: An introductory review and an Affect Infusion Model (AIM). *European Journal of Social Psychology,* 24(1) 1-24.

Fox, W., Spector, P. E., & Miles, D. (2001). Counterproductive work behaviour (CWB) in response to job stressors and organisational justice: Some mediator and moderator tests for autonomy and emotions. *Journal of Vocational Behaviour*, 59, 291-309.

Friedman, C. (2015). *Blank page vs bad record: academic dishonesty in SA universities*. Retrieved from: http://www.perdeby.co.za/sections/features/4139-blank-page-vs-a-bad-record-academic-dishonesty-in-sa-universities on June 06, 2018.

Giacalone, R. A., & Greenberg, J. (1997). *Antisocial behaviour in organisations*. Thousand Oaks, CA: Sage.

Global Economic Crime Survey (2014). *Confronting the changing face of economic crime.* Retrieved from: https://www.pwc.co.za/en/assets/pdf/global-economic-crime-survey-2014.pdf on May 22, 2018.

Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. D. Fruyt, & F. Ostendorf (Eds.), *Personality Psychology in Europe*, 7, (pp.7–28). Tilburg, The Netherlands: University Press.

Gorsuch, R. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of*

Personality Assessment, 68(3):532-60.

Greenberg J. (1990). Organizational justice: yesterday, today, and tomorrow. *Journal of Management,* 16, 399–432.

Griep, Y., Vantilborgh, T., & Jones, S. K. (2018). *The relationship between psychological contract breach and counterproductive work behaviour in social enterprises: Do paid employees and volunteers differ?* Retreived from: https://doi.org/10.1177/0143831X17744029 on June 02, 2018.

Gruen, T. W., Summers, J. O., & Acito, F. (2000). Relationship marketing activities, commitment, and membership behaviours in professional associations. *Journal of Marketing*, 64(1), 34–49.

Gruys, M. L. (1999). *The dimensionality of deviant employee performance in the workplace*. Unpublished doctoral dissertation, University of Minnesota.

Guest, D. E., & Conway, N. (2002). Communicating the psychological contract: An employer perspective. *Human Resource Management Journal, 12*(2), 22–38.

Gupta, V., Agarwal, U. A., & Khatri, N. (2016). The relationships between perceived organizational support, affective commitment, psychological contract breach, organizational citizenship behaviour and work engagement. *Journal of Advanced Nursing,* 72(11), 2806–2817.

Hair, J., Black, B., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis* (6th edn.). Tatham: Prentice Hall.

Hair, J. F., Black, C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis* (8th edn.). United Kingdom: Cengage.

Halbesleben, J. R. B., & Bowler, W. M. (2007). Emotional exhaustion and job performance: The mediating role of motivation. *Journal of Applied Psychology* 92(1), 93-106.

Heponiemi, T., Elovainio, M., Kouvonen, A., Kuusio, H., Finnie-Soveri, H., & Sinervo,

T. (2011). The effects of ownership, staffing level and organisational justice on nurse commitment, involvement, and satisfaction: A questionnaire study. *International Journal of Nursing,* 48(12), 1551-1561.

Hobfoll, S. E. (2002). Social and psychological resources adaption. R*eview of General Psychology*, 6, 307-324.

Hollinger, R. C., & Clark, J. P. (1983). *Theft of employees*. Lexington, MA: Lexington Books.

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53-60.

Hurley, A. E., Scandyra, T.A., Schreisheim, C. A., brannick, M. T., seers, A., & Williams, L. J. (1997). Exploratory and confirmatory factor analysis: Guidelines, Issues and alternatives, *Journal of Organisational Behaviour*, 1896), 667-683.

Ishad, H. M., & Shamsher, Q. (2016). Effect of breach of psychological contracts on workplace deviant behaviours with the moderating role of revenge attitude and self-control. *Pakistan Journal of Commerce and Social Sciences,* 10 (1), 69-83.

Ito, J. K., & Brotheridge, C. M. (2003). Resources, coping strategies, and emotional exhaustion: A conservation of resources perspective. *Journal of Vocational Behaviour, 63*(3), 490-509.

Jackson, D. L. (2003). Revisiting sample size and the number of parameter estimates: Some support for the N: q hypothesis. *Structural Equation Modelling*, 10, 128–141.

Jensen, J. M., & Patell, P. C. (2011). Predicting counterproductive work behaviour from the interaction of personality traits. *Personality and Individual Differences, 51*(4), 466-471.

Jeroskog, K. G., & Sorbom, D. (1983). *LISREL8: structural equation modelling with simplis command language*. Hillsdale,NJ: Lawrence Erlbaum Associates.

Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago: Scientific Software International.

Jex S.M., Spector, P. E., & Beehr, T.A. (1991). Emerging theoretical and methodological issues in the study of work-related stress. In K. Rowland & G. Ferris (Eds.) *Research in personnel and human resources management.* (pp.311-365), Greenwich, CT: JAI Press.

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm Shift to the Integrative Big-Five Trait Taxonomy: History, Measurement, and Conceptual Issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114-158). New York, NY: Guilford Press

Johnson, J. A. (2005). Ascertaining the validity of individual protocols from Web-based personality. *Journal of Research in Personality*, 39(1), 103-129.

Kakumba, U., Wamala, R., & Wanyama, S. B. (2014). Employment relations and bullying in Academia: A case of academic staff at Makerere University. *Journal of Diversity Management*, 9(1), 63-74.

Kalof, L., Dan, A., & Dietz, T. (2008). *Essentials of social research*. New York: Open University Press.

Kekana, M. (2015). *10 tertiary institutions to being investigated for fraud*. Eyewitness News, 10 October 2015.

Kelloway, E. K., Loughlin, C., Barling, J., & Nault, A. (2002). Self-reported counterproductive and organisational citizenship behaviours: separate but related. I*nternational Journal of Selection and Assessment*, 10(1/2), 143-151.

Kenny, D. A., & Judd, C. M. (1984). Estimating the nonlinear and interactive effects of latent variables. *Psychological Bulletin, 96*, 201-210.

Kennedy, D. B., Homant, R. J., & Homant, M. R. (2004). Perception of injustice as a predictor of support for workplace aggression. *Journal of Business and*

Psychology,18(3), 323- 336.

Kent. R., & Martinko, M. 1995. The development and evaluation of a scale to measure organizational attribution style. In M. Martinko (Eds), *Attribution theory: An organizational perspective*. (pp. 53-75). Delray Beach, FL: St. Lucie Press.

Kerlinger, F.N., & Lee, H. (2000). *Foundations of behavioural research.* University of California, California City: Harcourt Publishing.

Kerlinger, F.N., & Rint, N. (1986). *Foundations of behavioural research*. London: Winston Inc.

Khan, A.K., Quratulain, S., & Crawshaw, J. R. (2013). The mediating role of discrete emotions in the relationship between injustice and counterproductive work behaviours: A Study in Pakistan. Retrieved from: https://www.semanticscholar.org/paper/The-Mediating-Role-of-Discrete-Emotions-in-the-and-Khan-Quratulain/699c85a0 on 11 October 2019.

Kickul, J.R., Neuman, G., Parker, C., & Finkl, J. (2001). Settling the score: organisational justice in the relationship between psychological contract breach and anti-citizenship behaviour. *Employee Responsibilities and Rights Journal*, (13(1), 77-9.

Kidwell, R. E., & Martin, C. L. (eds.). (2005). *Managing organisational deviance*. Thousand Oaks, CA: Sage.

Kline, R. B. (2011). *Principles and practice of structural equation modelling* (3rd edn.). New York, NY: Guilford.

Klotz, A. C., & Buckley, M. R (2017). A historical perspective of counterproductive work behaviour targeting the organisation. *Journal of Management History*, 19(1), 114-132).

Kraak, J. M., Lunardo, R., Herrbach, O., & Durrieu, F. (2017). Promises to employees

matter, self-identity too: Effects of psychological contract breach and older worker identity on violation and turnover intentions. *Journal of Business Research,* 70, 108–117.

Kumar, R. (2011). *Research methodology. A step by step guide for beginners*. Los Angeles: Sage.

Lambert, E., Hogan, N., & Griffin, M. (2007). The impact of distributive and procedural justice on correctional staff job stress, job satisfaction, and organizational commitment. J*ournal of Criminal Justice,* 35, 644–656.

Lane, V. R., & Scott, S. G. (2007). The neural network model of organizational identification. *Organizational Behaviour and Human Decision Processes* 104(2):175-192.

Lau, V. C., Au, W. T., & Ho, J. M. (2003). A qualitative and quantitative review of antecedents of counterproductive work behaviour in organisations. *Journal of Business and Psychology*, 18, 533-553.

Le Roy, J., Bastounis, M., & Poussard, J. M. (2015). Interactional justice and counterproductive work behaviours: the mediating role of negative emotions. *Social Behaviour and Personality: An International Journal*, 40(8), 1341-1355.

Leiter, M. P. (1993). Burnout as a developmental process: Consideration of models. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Series in applied psychology: Social issues and questions. Professional burnout: Recent developments in theory and research.* (pp. 237-250). Philadelphia, PA, US: Taylor & Francis.

Little, R. J. A., & Rubin, D. B. (2002.) *Statistical Analysis with missing data,* (2nd ed. New Jersey: John Wiley & Sons.

Lokz, A. R. (1999). Personality predictors of retail Employee theft and counterproductive behaviour. *Journal of Professional Services Marketing, 1*92) 107-114.

Lowe, R. H., & Vodanovich, S. J. (1995). A field study of distributive and procedural

justice as predictors of satisfaction and organisational commitment. *Journal of Business and Psychology*, W, 99-114.

MacCallum & Austin (2000). Applications of structural equation modelling in psychological research. *Annual Review of Psychology*, 51, 201–226.

MacCallum, R. C., Widaman, K., Zhang, S., & Hong, S. (1999). Sample Size in Factor Analysis. P*sychological Method*s 4(1):84-99

Majors, M. S., & W. E. Sedlacek (2001). Using factor analysis to organize student services. *Journal of College Student Development 42*(3): 2272-2278.

Malik, S. Z., & Khalid, N. (2016). Psychological contract breach, work engagement and turnover intention: Evidence from banking industry in Pakistan. *Pakistan Economic and Social Review* 54(1), 37-54.

Marcus, B., & Schuler, H. (2004). Antecedents of counterproductive behaviour at work: A general perspective. *Journal of Applied Psychology,* 89(4), 647-660.

Marcus, B., Taylor, O. A., Hastings, S. E., & Weigelt, O. (2016). The structure of counterproductive work behaviour: A review, a structural meta-analysis, and a primary study. *Journal of Management* 42(1), 147-158.

Marsh, H.W., Hau, K.T., Balla, J. R.,& Grayson, D. (1998). Is more ever too much? The number of indicators per factor in confirmatory factor analysis. *Multivariate Behavioral Research*, 33, 181–220.

Martinko, M. J., Gundlach, M. J., & Douglas, S. C. (2002). Toward an integrative theory of counterproductive workplace behaviour: A causal reasoning perspective. *International Journal of Selection and Assessment*, 41, 36-50.

Martinko, M.J., & Gardner, W. L. (1982). Learned Helplessness: An alternative explanation for performance deficits. *The Academy of Management Review 7*(2):195-204.

Matsunaga, M. (2008). Item parcelling in structural equation modelling: A primer, *Communication Methods and Measures*, 2(4), 260-293).

Mathieu, J., & Zajac, D. (1990). A review of meta-analysis of the antecedents, correlates and consequences of organizational commitment. *Psychological Bulletin*, 108(2) 171-94.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology,* 52, 81–90.

Meloun, M., & Militky, J. (2011) Statistical Data Analysis, a Practical Guide. Woodhead Publishing, New Delhy.

Mels, G. (2003). A workshop on structural equation modelling with LISREL 8.54 for Windows. Chicago, IL: Scientific Software International.

Mercurio, Z. A. (2015). Affective commitment as a core essence of organizational commitment: An integrative literature review. *Human Resource Development Review,* 14(4), 389–414.

Meyer, J.P., & Maltin, E. R. (2010). Employee commitment and well-being: a critical review, theoretical framework and research agenda, *Journal of Vocational Behaviour*, 77(2), 323-337.

Meyer, J. P., Stanley, D. J. Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organisation: a meat analysis of antecedents' correlates and consequences. *Journal of Vocational Behaviour*, 61, 20-52.

Morrison, E.W., & Robinson, S.L. (1997). When employees feel betrayed: A model of how psychological contract violation develops. *Academy of Management Review*, 22, 226–256.

Mount, M. K., Barrick, M. R., Scullen, S. M., & Rounds, J. (2005). Higher order

dimensions of the big five personality traits and the big six vocational interest types. *Personnel Psychology, 5*8(2), 447-478.

Mowday, R., Porter, L., & Steers, R. (1982). *Employee–organization linkages: The psychology of commitment, absenteeism, and turnover*. New York: Academic Press.

Murray, B. (1999). The effects of blame attributions and offender likableness on forgiveness and revenge in the workplace. *Journal of Management*, 25, 607-627.

Mustillo, S., & Kwon, S. (2015). Auxiliary variables in multiple imputation when data are missing not at random. *The Journal of Mathematical Sociology*, 39(2), 73-9.

Naidu, E. (2018). Universities body to probe gender imbalance at the top. Retrieved From:https://www.universityworldnews.com/post.php?story=20180725103923330 on August 25, 2019.

Nasir, M., & Bashir, A. (2012). Examining workplace deviance in public sector organisations of Pakistan. *International Journal of Social Economics*, 39(4), 240-253.

Nasser, F., & Wisenbaker, J. (2003). A Monte Carlo study investigating the impact of item parcelling on measures of fit in confirmatory factor analysis. *Educational and Psychological Measurement, 63*(5), 729–757.

Neuman, J. H., & Baron, R. A. (2005). Workplace violence and workplace aggression: Evidence concentring specific forms, potential causes, and preferred targets. *Journal of Management,* 78, 679-703.

Nevins-Bennet, C. G. (2016). Counterproductive work behaviour among academic and administrative staff and its effect on the organisational effectiveness. *Advances in Social Sciences Research Journal, 3*(2), 29-41.

Noblet, A. J., Rodwell, J. J., & Allisey, A F. (2009). Police stress: the roles of the psychological contract and perceptions of fairness. Policing: *An international Journal of Strategies and Management,* 32(4), 613-630.

Nunnally, J. C. (1978). *Psychometric theory.* New York: McGraw-Hill.

Omoregie, J. (2014). The nature and nurture of deviant behaviour. *Matters of Behaviour*, 1(1), 1-12.

Paille, P., Grima, F., & Dufour, M. (2015). Contribution to social exchange in public organisations: examining how support, trust, satisfaction, commitment and work outcomes re related. *The International Journal of Human Resources Management, 26*(4), 520-546.

Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS.* (6th edn.). London: McGraw-Hill.

Pallant, J. (2013). *SPSS Survival Manual. A step by step guide to data analysis using SPSS*. (4th edn.). Allen & Unwin.

Penney, K. I., & Atkinson, I. (2011). Approaches for dealing with missing data in health care studies. *Journal of Clinical Nursing*, 21, 2722-2729.

Penney, L. M., Hunter, E. M., & Perry S. J. (2011). Personality and counterproductive work behaviour: Using conservation of resources theory to narrow the profile of deviant employees. *Journal of Occupational and Organizational Psychology,* 84, 58-77.

Peterson, P., & Subroyen, J. (2017). *18 UKZN staff suspended, one fired over sale of study places*. Retrieved from:https://www.ecr.co.za/news/news/18-ukzn-staff-suspended-one-fired-over-sale-study-places/ on 3 August 2017.

Preacher, K. J.,& Coffman, D. L. (2006). Computing power and minimum sample size for RMSEA (Computer software). Retrieved from http://quantpsy.org/. on 3 October 2019.

Purang, P. (2011). Organisational justice and affective commitment: the mediating role of perceived organisational support. *Asian Academy of Management Journal,* 16 (1), 141–156.

Ramshinda, A. P., & Manikandan, K. (2013). Organizational commitment as a mediator of counterproductive work behaviour and organizational culture. *International Journal of Social Science & Interdisciplinary Research, 2(2), 59-69.*

Rehman, M. U., Rabbia, I., Namra, T., Zara, I., Uzma, N., & Ume, S. (2012). The Impact of Job Stress on Employee Job Satisfaction: A Study on Private Colleges of Pakistan. *Journal of Business Studies Quarterly 3(*3), 50-56.

Republic of South Africa (2003). National Health Act (Act 61 0f 2003). Pretoria: Government Printers.

Republic of South Africa (1974). Health Professions Act (Act 56 of 1974). Pretoria: Government Printers

Restubog, S., Zagenczyk, T., Bordia, P. Bordia, S., & Chapman, G. J. (2015). If you wrong us, shall we not revenge? Moderating role of self-control and perceived aggressive work culture in predicting responses to psychological contract breach. *Journal of Management*, *4*1(4), 1132-1154.

Rhemtulla, M. (2016). Population performance of SEM parcelling strategies under measurement and structural model misspecification. *Psychological Methods*. Advance online publication. Retrieved from: http://dx.doi.org/10.1037/met0000072.on June 07, 2018.

Richard, O. C., McMillan-Capehart, A., Bhuian, S. N., & Taylor, E. C. (2009). Antecedents and consequences of psychological contracts: Does organizational culture really matter? *Journal of Business Research*, 62(8), 818-825.

Robinson, S. L., & Bennet, R. I. (1995). A typology of deviant workplace behaviours: A multi-dimensional scaling study. *Academy of Management*,38, 555-572.

Robinson, S. L., & Greenberg, J. (1998). Employees behaving badly: Dimensions, determinants and dilemmas in the study of workplace deviance. In C. L. Cooper & D. M. Rousseau (Eds.), *Trends in organizational behaviour* (pp. 1-30). New York: Wiley.

Robinson S. L., Kraatz, M. S., & Rousseau, D. M. (1994). Changing obligations and the psychological contract: A longitudinal study. *Academy. Management Journal*, 37: 137–152.

Robinson, S. L., & Morrison, W. W. (2000). The development of psychological contract breach and violation. A longitudinal study. *Journal of Organisational Behaviour*, 21(5), 525-546.

Root, G. N. (2017). The role of trust in an employee-manager relationship. Retrieved from:http://smallbusiness.chron.com/role-trust-employeemanager-relationship-11614.html. Accessed 2018/05/15.on May 15, 2018.

Roseman, I., Wiest, C., & Swartz, T. S. (1994). Phenomenology, behaviours, and goals differentiate discrete emotions, *Journal of Personality and Social Psychology*, 67(2), 206-221.

Rosen, C. C., Chang, C., Johnson, R. E., & Levy P. E. (2009). Perceptions of the organizational context and psychological contract breach: Assessing competing perspectives. *Organisational Behaviour and Human Decision Processes*, 108, 202-217.

Rousseau, D. (2000). *Psychological Contract Inventory* (Tech. Rep. No. 2000–02). The Heinz School of Public Policy and Management, Carnegie Mellon University, Pittsburgh, PA.

Royston, P. (2005). Multiple imputation of missing values: update. *The State Journal*, 5(2), 188-201.

Rubin, D.B. (1987). *Multiple Imputation for Nonresponse in Surveys*. New York: John Wiley & Sons.

Sackett, P. R. (2002). The structure of counterproductive work behaviours: Dimensionality and relationships with facets of job performance. *International Journal of Selection and Assessment*, 10(1/2), 6-11.

Saint-Maurice, P. F., Kim, Y., & Welk, G, J. (2017). Evidence for data missing at random in youth physical activity monitoring research. *Journal of Sports Sciences*, 35(5), 484-490.

Sakketou, A., Galanakis, M., Varvogli, L., Chrousos, G., & Darviri, C. (2014). Validation of the Greek Version of the "Job Stress Measure'. *Psychology,* 5, 1527-1535.

Salgado, J. F (2000). The big five personality dimensions and counterproductive behaviours. *International Journal of Selection and Assessment*, 10(1/2), 117-125.

Sheldon, W., & Stevens, S. S. (1942). *The varieties of human temperament: A psychology of constitutional differences*. New York: Harper.

Sieger, P., Bernhard, F., a& Frey, U. (2011). Affective commitment and job satisfaction among non-family employees: Investigating the roles of justice perceptions and psychological ownership. *Journal of Family Business Strategy*, 2,78–89.

Silva-Ramirez, E. L., Pino-Mejias, R., Lopez-Coello, M., & Cubiles-de-laVega, M. D. (2010). Missing value imputation on missing completely at random data using multilayer perceptions. *Nuetral Networks,* 24, 121-129.

Soubelet, A., & Salthouse, T. A (2011). Influence of social desirability on age differences in self-reports of mood and personality. *Journal of Personality*, 79(4), 741-762.

Spector, P. E., & Fox, S. (2002). An emotion-centred model of voluntary work behaviour. Some parallel between counterproductive work behaviour and organisational citizenship behaviour. *Human Resource Management Review*, 12, 269-292.

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal Conflict at Work Scale, Organizational Constraints Scale, Quantitative Workload Inventory, and Physical Symptoms Inventory. *Journal of Occupational Health Psychology* 3(4), 356-67 ·

Spector, P. E., & Miles, D. (2001). Counterproductive work behaviour (CWB) in response to job stressors and organisational justice: Some mediator and moderator tests for autonomy and emotions. *Journal of Vocational Behaviour, 5*9, 291-309.

Spector, P. E., & O'Connell, B.J. (1994). The contribution of personality traits, negative affectivity, locus of control and Type A to the subsequent reports of job stressors and job strains. *Journal of Occupational and Organizational Psychology,* 67(1), 1-12.

Spreitzer, G. M., & Sonenshein, S. (2004). Toward the construct definition of positive deviance. *American Behavioural Scientist,* 47(6), 828-847.

Stephenson, M. T., & Holbert, R. L. (2003). A Monte Carlo simulation of observable versus latent variable structural equation modeling techniques. *Communication Research, 30*(3), 332–354. https://doi.org/10.1177/0093650203030003004

Storms, P. L., & Spector, P. E. (1987). Relationships of organizational frustration with reported behavioural reactions: The moderating effect of perceived control. *Journal of Occupational Psychology*, 60, 227–234.

Sullivan, T. R., Salter, A. B., & Lee, K. J. (2015). Bias and precision of the multiple imputation, then deletion method for dealing with missing outcome data. *American Journal of Epidemiology,* 182(6), 528-534.

Tabachnick, B.G., & Fidell, L.S. (2007. *Using multivariate statistics* (5th edn.). New York: Allyn and Bacon.

Taber, K. (2017). The use of Cronbach Alpha when developing and reporting research instruments in Science Education, *Research in Science Education*, Doi: 10.1007/s11165-016-9602-2. From: https://www.researchgate.net/publication/317777374_The_Use_of_Cronbach's_Alpha_When_Developing_and_Reporting_Research_Instruments_in_Science_Education on 12 October 2019

Tau, S. (2017). Wits dismisses professor found guilty of sexual misconduct. Retrieved from:https://citizen.co.za/news/south-africa/1414933/wits-dismisses-professor-found-guilty-sexual-misconduct/ on 11 November 2017.

Taylor, I. R., Walton, P., & Young, J. (1973). *The new criminology: for a social theory of deviance*. London: Routledge.

Terre Blanche, M., Durrheim, K., & Painter, D. (2016). *Research in practice: applied methods for the social sciences* (2nd edn.). Cape Town: Juta.

Terris, W., & Jones, J, (1982). Psychological factors related to employees' theft in the convenience store industry. *Psychological Reports* 51, 3 (2), 1219-38.

Theron, A., & Dodd, N. M. (2011). Organisational commitment in the era of the new psychological contract. *South African Journal of Economic and Management Sciences*, 14(3), 333-345.

Theron, C. (2016). *Polynomial regression analyses with response surface modelling* Cape Town: Stellenbosch University: Class Notes.

Thoresen, C.J., Kaplan, S. A., Barsky, A. P., Warren. C. R., & de Chermont, K. (2003). The affective underpinnings of job perceptions and attitudes: a meta-analytic review and integration. *Psychological Bulletin*, 129, 914–45.

Tomlinson, E. C., & Greenberg, J. (2005). Understanding and deterring employee theft with organisational justice. In Langan-Fox et al., (2005). *Research companion to the dysfunctional workplace; management challenges and symptoms*. (pp. 126-180) London: Edward Edgar Publishing, Inc.

Umpress, E. E., & Bingham, J. B. (2011). When employees do bad things for good reasons: Examining unethical pro-organizational behaviours. *Organisation Science, 22*(3), 621-640.

Uprichard, E. (2011). Sampling: bridging probability and non-probability designs. *International Journal of Social Research Methodology*, 16(1), 1-11.

Van Katwyk, P. T., Fox, S., Spector, P. E., & Kelloway, E. K. (2000). Using the job-related affective well-being scale (JWS) to investigate affective responses to work stressors. *Journal of Occupational Health Psychology,* 592), 219-230.

Vantilborgh, T., Bidee, J., Pepermans, R., Griep, Y., & Hofmans, J. (2016). Antecedents of Psychological Contract Breach: The role of job demands, job resources, and affect. *PLoS One*. 11(5), e0154696. Retrieved from: https://doi.org/10.1371/journal.pone.0154696. on May 13, 2018.

Vardi Y., & Weitz E. (2004). *Misbehaviour in organizations: theory, research and management*. Mahwah, NJ: Lawrence Erlbaum.

Vardi, Y., & Wiener, Y. (1996). Misbehaviour in organisations: a motivational framework. *Organisation Society*, 7(2), 151-165.

Vazquez, Y. (2018). The Fraud Examiner. The fraud curve: white-collar crime in higher education. *Association of Certified Fraud Examiner* (ACFE). Retrieved from: https://www.acfe.com/fraud-examiner.aspx?id=4294972114 On January 22, 2018.

Velicer, W. F., & Jackson, D. N. (1990). Component analysis versus common factor analysis: Some further observations. *Multivariate Behavioural Research 25*(1):97-114.

Viljoen, D. (2018). *Higher education – a vast and changing future landscape*. Retrieved from:https://www.fin24.com/Finweek/Featured/higher-education-a-vast-and-changing-future-landscape-20180228. On May 15, 2018.

Wade, S. H. (1989). *The Development of a scale to measure forgiveness*. Unpublished Doctoral Dissertation, Fuller Theological Seminary: California.

Waswa, F., & Katana, G. (2017). Academic staff perspectives on operating beyond industrial actions for sustainable quality assurance in public universities in

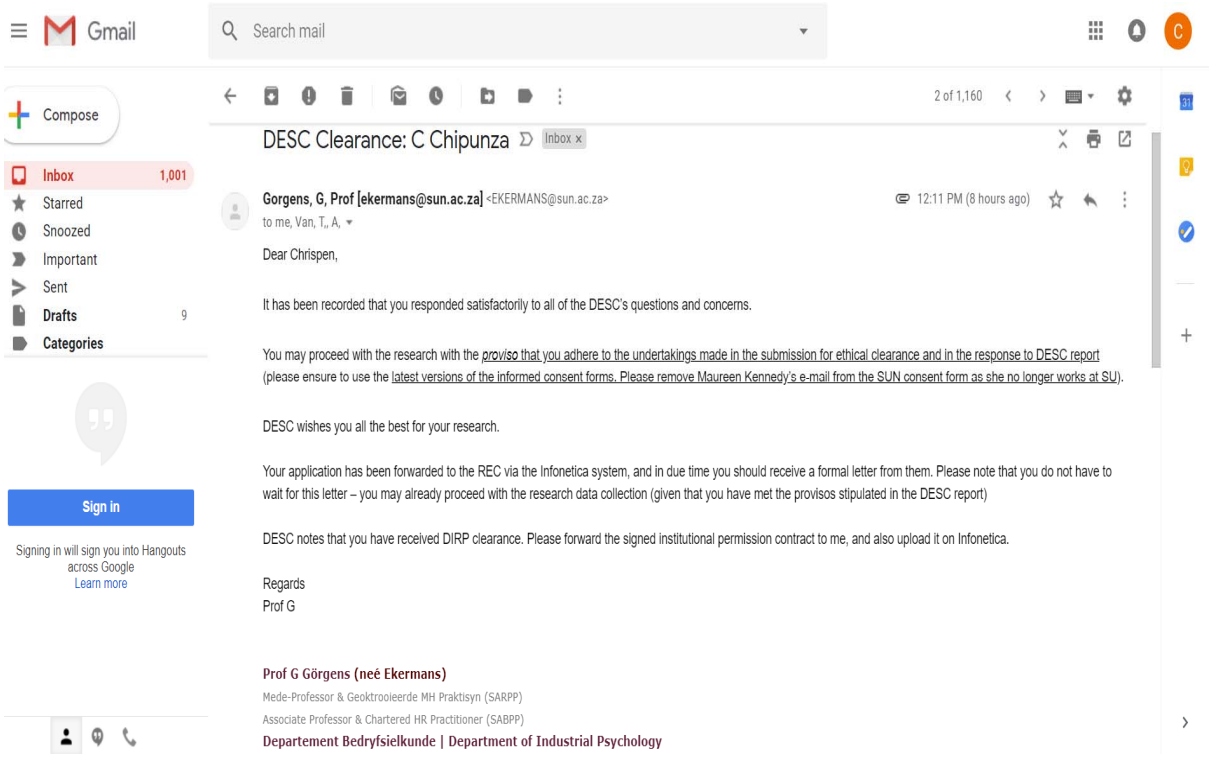
Kenya. *International Journal of Environment, Workplace and Employment,* 4(1), 45-58.

Watson, D., Clark, L. A., & Tellegan, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology,* 54(6), 1063–1070.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: an evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, 73(6), 913-934.

Zhang, H., & Agarwal, N. C. (2009). The mediating roles of organizational justice on the relationships between HR practices and workplace outcomes: an investigation in China. *The International Journal of Human Resource Management,* 20(3), 676–693.

APPENDIX A



Gmail

Search mail

Compose

Inbox 1,001
Starred
Snoozed
Important
Sent
Drafts 9
Categories

Sign in

Signing in will sign you into Hangouts across Google
Learn more

2 of 1,160

DESC Clearance: C Chipunza Inbox x

Gorgens, G, Prof [ekermans@sun.ac.za] <EKERMANS@sun.ac.za> 12:11 PM (8 hours ago)
to me, Van, T,, A,

Dear Chrispen,

It has been recorded that you responded satisfactorily to all of the DESC's questions and concerns.

You may proceed with the research with the *proviso* that you adhere to the undertakings made in the submission for ethical clearance and in the response to DESC report (please ensure to use the latest versions of the informed consent forms. Please remove Maureen Kennedy's e-mail from the SUN consent form as she no longer works at SU).

DESC wishes you all the best for your research.

Your application has been forwarded to the REC via the Infonetica system, and in due time you should receive a formal letter from them. Please note that you do not have to wait for this letter – you may already proceed with the research data collection (given that you have met the provisos stipulated in the DESC report)

DESC notes that you have received DIRP clearance. Please forward the signed institutional permission contract to me, and also upload it on Infonetica.

Regards
Prof G

Prof G Görgens (neé Ekermans)
Mede-Professor & Geoktrooieerde MH Praktisyn (SARPP)
Associate Professor & Chartered HR Practitioner (SABPP)
Departement Bedryfsielkunde | Department of Industrial Psychology

APPENDIX B

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

CONSENT TO PARTICIPATE IN RESEARCH

Dear Academic Staff Member

My name is Crispen Chipunza, a student at the Department of Industrial Psychology at Stellenbosch University (Supervisor: Francois van der Bank). We would like to invite you to take part in a survey, the results of which will contribute to a research project in order to complete my Masters in Industrial Psychology degree.

Please take some time to read the information presented here, which will explain the details of this project.
Your participation is entirely voluntary, and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

The purpose of this study is to examine the psychological and organisational reasons for why academics engage in counter-productive work behaviours.

The survey will take approximately 30 minutes to complete.

Please note that there is a risk that you might experience some discomfort when responding to some questions on constructs such as occupational stress, retaliation feelings, and psychological contract breach perceptions. However, please note that the data collected from you on these constructs will be collected anonymously. In addition, Stellenbosch University, through its Employee Wellness Programme, provides counselling services, should you experience any discomfort or stress. The contact details for such services can be found on: https://www.sun.ac.za/english/human-resources/employee-wellness/about-wellness. Tel: 021 808 4824 or email: maureenk@sun.ac.za.

RIGHTS OF RESEARCH PARTICIPANTS:
You have the right to decline answering any questions and you can exit the survey at any time without giving a reason. You are no legal claims, rights or remedies because of your participation in this research study.
If you have questions regarding your rights as a research participant, contact Mrs Maléne Fouché (mfouche@sun.ac.za; 021 808 Division for Research Development at Stellenbosch University.

Your responses will be completely anonymous and will be kept in a password protected file on a password encrypted computer. Only myself and my supervisor will have access to the survey responses. All the data collected will be safely stored by the supervisor for 5 years and then destroyed.

If you have any questions or concerns about the research, please feel free to contact the researcher [Crispen Chipunza] [0611387325] and/or the Supervisor, [Mr Francois van der Bank] [(fvdb@sun.ac.za) / 021 808 3016).

To save a copy of this text, please tick in the appropriate box below and press the SAVE button.

I confirm that I have read and understood the information provided for the current study.	YES	NO
	☐	☐
I agree to take part in this survey and that the data may be used for future research purposes	YES	NO
	☐	☐

APPENDIX C

UNIVERSITEIT•STELLENBOSCH•UNIVERSITY
jou kennisvennoot • your knowledge partner

Instructions

Your responses to this survey will be treated with uttermost confidentiality

1. Your name is not needed anywhere in this survey
2. Indicate your response to each item by 'clicking' the number that best represents your standing on the item
3. At the end of the survey, please press the 'SAVE' button

Thank you for willing to participate in this study, well appreciated.

Section A: Biographical Information

The demographical information in this study is needed for statistical purposes only. For example, checking the distribution of the sample in terms of gender, age, race, category of employment and educational qualification, and years in service.

Age Range

a. 25-24
b. 35-44
c. 45-54
d. 55+

Gender

a. Male
b. Female

Race

a. Black
b. Coloured
c. White
d. Indian/Asian

Employment type

a. Academic
b. Non-academic

Highest Qualification

a. Postgraduate diploma
b. Honours/B. Tech
c. Masters
d. Doctorate

Years of Service

a. Less than 2 years
b. 2-5 years
c. 5-10 years
d. More than 10 years

Section B: Psychological Contract Breach

Below is a list of statements that represent how well your employer has fulfilled the promised obligations it owes you. With respect to the statements below, indicate your level of agreement or disagreement with each one of them

	Statements	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	Almost all of the promises made by my employer during recruitment have been kept so far (reversed)	1	2	3	4	5
2	I feel that my employer has come through in fulfilling the promises made to me when I was hired (reversed)	1	2	3	4	5
3	So far my employer has done an excellent job of fulfilling its promises to me (reversed)	1	2	3	4	5
4	I have not received everything promised to me in exchange for my contributions	1	2	3	4	5
5	My employer has broken many of its promises to me even though I've upheld my side of the deal	1	2	3	4	5

Section C: Feelings of Revenge

Listed below is a number of statements that describe your feelings and thoughts. With respect to each statement, please select how often you felt or thought a certain way.

	Statements	Never	Rarely	Sometimes	Very often	Always
1	I will make the institution pay	1	2	3	4	5
2	I wish that something bad could happen to institution	1	2	3	4	5
3	I want the institution to get what it deserves	1	2	3	4	5
4	I am going to get even	1	2	3	4	5
5	I want to see the institution hurt and miserable	1	2	3	4	5

Section D: Counter-Productive Work Behaviour

Below is a list of deviant workplace interpersonal, self-destructive and organisational behaviours. Please indicate how often you have engaged in each of the listed behaviours

	Statements	Never	Rarely	Sometimes	Very often	Always
1	Exaggerated about your hours worked	1	2	3	4	5
2	Started negative rumours about your company	1	2	3	4	5
3	Gossiped about your co-workers	1	2	3	4	5
4	Covered up your mistakes	1	2	3	4	5

5	Competed with your co-workers in an unproductive way	1	2	3	4	5
6	Gossiped about your supervisor	1	2	3	4	5
7	Stayed out of sight to avoid work	1	2	3	4	5
8	Taken institutional equipment or resources	1	2	3	4	5
9	Blamed your co-workers for your mistakes	1	2	3	4	5
10	Intentionally worked slow	1	2	3	4	5

Section E: Justice Perceptions

Listed below is a series of statements that assess your perception of fairness with regards to how decisions on outcomes and resource allocations are made as well as the methods, mechanisms and procedures used to determine those outcomes. Outcomes and resource allocations refer to things such as terms of employment, informal benefits and privileges (e.g. sabbaticals, and flexi-time and training opportunities) and work distributions. With respect to the statements below, indicate to what extent:

	Statement	**To a very small extent**	**To a small extent**	**To a moderate extent**	**To a large extent**	**To a very large extent**
1	Do you have the opportunity to express your views when decisions are made about resource allocations, such as the terms of employment, informal benefits and privileges (e.g. sabbaticals, flexi-time and training opportunities) and work distributions) in your work environment?	1	2	3	4	5
2	Do the procedures used to arrive at resource allocations allow you to influence the decisions?	1	2	3	4	5
3	Are the procedures used to arrive at the decisions about resource allocations applied consistently?	1	2	3	4	5
4	Are those procedures free of bias?	1	2	3	4	5
5	Are those procedures based on accurate information?	1	2	3	4	5
6	Are you able to appeal the decisions arrived at by those procedures?	1	2	3	4	5
7	Do those procedures uphold ethical and moral standards?	1	2	3	4	5
8	Do the outcomes and resource allocations (as explained above) in your work environment, reflect the effort people put into their work?	1	2	3	4	5
9	Are those outcomes appropriate for the work you have completed?	1	2	3	4	5
10	Do those outcomes reflect what you have contributed to your work?	1	2	3	4	5
11	Are those outcomes justified, given your performance?	1	2	3	4	5

Section F: Affective Commitment

Below are statements that represent the employee's attachment to the organisation. With respect to the statements, please indicate your level of agreement or disagreement with each one of them.

	Statements	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	I would be very happy to spend the rest of my career with this organization	1	2	3	4	5
2	I really feel as if this organization's problems are my own	1	2	3	4	5
3	I do not feel 'emotionally attached' to this organization (reversed)	1	2	3	4	5
4	This organization has a great deal of personal meaning for me	1	2	3	4	5
5	I do not feel like 'part my family' at this organization (reversed)	1	2	3	4	5
6	I enjoy discussing about my organization with people outside it	1	2	3	4	5
7	I think that I could easily become as attached to another organization as I am to this one (reversed)	1	2	3	4	5
8	I feel a 'strong' sense of belonging to my organization	1	2	3	4	5

Section G: Occupational Stress

Below is a list of items associated with experiencing work-related stress in the work environment. With respect to the statements, indicate the extent of the work-related stress being produced by each of the items below.

	Statements	Produces no stress	Produces little stress	Produces some stress	Produces quite a bit of stress	Produces a great deal of stress
1	The number of projects and/or assignments I have	1	2	3	4	5
2	The amount of time I spend at work	1	2	3	4	5
3	The number of phone calls and office visits I have during the day	1	2	3	4	5
4	The volume of work that must be accomplished in the allotted time	1	2	3	4	5
5	The time pressures I experience	1	2	3	4	5
6	The lack of job security I have	1	2	3	4	5
7	The amount of responsibility I have	1	2	3	4	5
8	The scope of responsibilities my position entails.	1	2	3	4	5
9	The degree to which my career seems "stalled"	1	2	3	4	5
10	The lack of opportunities for career development I have had	1	2	3	4	5
11	The amount of time I spend in meetings	1	2	3	4	5
12	The amount of traveling I must do	1	2	3	4	5

13	The inability to clearly understand what is expected of me on the job	1	2	3	4	5
14	The extent to which my position presents me with conflicting demands	1	2	3	4	5
15	The amount of red tape I need to go through to get my job done	1	2	3	4	5
16	The degree to which politics rather than performance affects organisational decisions	1	2	3	4	5

Section H: Negative Emotions

Below is a list of words the describe different feelings and emotions. With respect to the words, indicate to what extent you are experiencing each emotion 'today'

	Emotion	**Not at All**	**A Little**	**Moderately**	**Quite a Bit**	**Extremely**
1	Worried	1	2	3	4	5
2	Anxious	1	2	3	4	5
3	Depressed	1	2	3	4	5
4	Frustrated	1	2	3	4	5
5	Angry/Hostile	1	2	3	4	5
6	Unhappy	1	2	3	4	5

Section I: Conscientiousness

Listed below are several characteristics that may or may to apply to you. With respect to the statements, please indicate the extent to which you agree or disagree with each one of them.

	Statement	**Strongly Disagree**	**Disagree**	**Not sure**	**Agree**	**Strongly Agree**
1	I see myself as someone who does a thorough job	1	2	3	4	5
2	I see myself as someone who can be somewhat careless (reversed)	1	2	3	4	5
3	I see myself as someone who is a reliable worker	1	2	3	4	5
4	I tend to be disorganised (reversed)	1	2	3	4	5
5	I tend to be lazy (reversed)	1	2	3	4	5
6	I see myself as someone who perseveres until the task is finished	1	2	3	4	5
7	I do things efficiently	1	2	3	4	5
8	I regard myself as someone who makes plans and follow through with them	1	2	3	4	5
9	I am easily distracted (reversed)	1	2	3	4	5

Thank you for participating in the study.